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"It will flourish, if naturalists, chemists, antiquaries, philologers, and men of ence, in different parts of *Asia*, will commit their observations to writing, and d them to the Asiatic Society at Calcutta. It will languish if such communica- s shall be long intermitted; and it will die away, if they shall entirely cease." a WM. JONES.

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established about 484 B. C. It does not appear from the authorities whether the kingdom of Tagoung is believed to have continued contemporaneously with that of Prome.

There is no doubt that the frequent shiftings of their capitals is characteristic of the Indo-Chinese nations, and is connected with the facilities for migration presented by their great navigable rivers, and by the unsubstantial nature of their dwellings. Still, one cannot but have some suspicion that the desire to carry back to a remoter epoch the existence of the empire as a great monarchy, has led to the representation of what was really the history of various petty principalities, attaining probably an alternate preponderance of dominion, as the history of one dynasty of monarchs in various successive seats.

Pegu, it need not be said, was an independent kingdom, though several times subjected for a longer or shorter period by the Burmans previous to the last conquest by Alompra, and twice at least in its turn subjecting Ava.* Toungú also appears undoubtedly to have been a separate kingdom for a considerable period, two of its kings or princes in succession having conquered Pegu during the sixteenth century; and Martaban was the seat of an independent prince for at least 140 years. Tavoy was occasionally independent, though at other times alternately subject to Pegu or Siam. Aracan, bearing much the same relation to Burma that Norway did to Sweden, preserved its independence till the end of the last century. But besides these, there are perhaps indications of other principalities within the boundaries of Burma proper. Kings of Prome are mentioned in the histories of the Portuguese adventurers. Ferdi-

* In the thirteenth century three generations of Burman kings reigned over Pegu. In 1554 or thereabouts, the king of Pegu, who was a Burmese prince of Toungú, conquered Ava and its empire as far as Mogoung and the Shan state of Thein-ní. This was the acme of Peguan prosperity, but even that was under a Burmese sovereign. About 1613 the king of Ava became master of Pegu and all the lower provinces. So matters continued till the Peguan revolt of 1740 and the following years, which not only succeeded in the expulsion of the Burmans, but in 1752 in the conquest of Ava. This brief ascendancy was upset in the same year by the Hunter-Captain Alompra, whose dynasty still sits on the throne of Ava, though Pegu has past into the hands of the *Kalás*.

nand Mendez Pinto speaks of several other kingdoms on the Iráwádí; but he is to be sure a very bad authority. Father Sangermano also, in his abstract of the Burmese chronicles, appears to speak of contemporary kings of Myen-zain or Panya, Ta-goung and Tsa-gaing.*

These instances may, however, originate only in the ambiguity of the Burmese title MEN, which is applied equally to the King of England and to the Governor General of India, to the king of Burma and to all the high dignitaries and princes of his provinces.

The Empire of Prome came to an end, it is said, through civil strife,† and one of the princes, in A. D. 107, flying to the north, established himself at Pagán. According to the view taken by Crawfurd and Burney, as well as Sangermano, the Burmese monarchy continued under a succession of fifty-two or fifty-five princes, to the end of the thirteenth century.

But the authority quoted by Mr. Mason‡ (apparently an edition of the royal chronicle) implies that the city founded, or re-founded, in 107 was that of *Upper* Pagán on the Upper Iráwádí closely adjoining Tagoung, and that the Pagán of which we now speak was not founded till 847 or 849.

The site of upper Pagán has been visited by Captain Hannay in 1835, and by the Rev. Mr. Kincaird in 1837.

Capt. Hannay says,§ "About a mile to the south of this (Tagoung) is a place called Pagan-myo, which is now a complete

* Description of the Burmese Empire, pp. 42, 43.

† The following quaint legend is related by Sangermano. On the day of the last king's death it happened that a countryman's cornsieve, or winnowing fan, was carried away by an impetuous wind. The countryman gave chase, crying out: "Oh my cornsieve! oh my cornsieve!" The citizens, disturbed by the clamour, and not knowing what had happened, began likewise to cry, "Army of the Cornsieve! Soldiers of the Cornsieve!" A great confusion consequently arose and the citizens divided themselves into three factions, who took up arms against one another, and were afterwards formed into three nations, the Pyu, the Karan, and the Burmese. (The *Pyu* were probably the people in the neighbourhood of Prome; Karan or Kauran the Arracanese. *See* PHAYRE *in* J. A. S. B. XIII. 29.)

‡ *Natural Productions of Burma*, II. 450.

§ M. S. Narrative of a journey from Ava to the Amber-mines near the Assam frontier. *(In Foreign Office*, Calcutta.)

jungle, but covered with the remains of brick buildings as far as the eye can reach. There are also the ruins of several large temples which have now more the appearance of earthen mounds than the remains of the brick buildings, and they are covered with jungle to the top." The people on the spot told Capt. Hannay that the city was much more ancient than the other Pagán. And indeed we heard this upper city spoken of as "old Pagán," when we were at the capital.

Some interesting discoveries in Burmese history and antiquities may yet be made among the ruins of which Capt. Hannay speaks.

Nine of the oldest temples at Pagán are ascribed, according to Crawfurd, to king Pyán-bya, circa 850. This coincides with the reign and date to which Mr. Mason's account assigns the foundation of the city.

Here then twenty-one kings reigned in regular succession from the middle of the 9th to the end of the 13th century, and here in the year 997, under the apostleship of A-ráhan and the reign of Anau-ra-men-zan, Buddhism was established in its present shape as the religion of the country.*

The history of the destruction of Pagán has been related by Col. Burney from the Burmese chronicles.† Indignant at the murder of an ambassador by the Burmese king, the Emperor of China sent a vast army to invade Burma. The king, Narathee-ha-padé, in his anxiety to strengthen the defences of his capital, pulled down, for the sake of the materials, (so the chronicle relates), one thousand large arched temples, one thousand smaller ones, and four thousand square temples. But under one of these temples a prophetic inscription of ominous import was found: the king lost heart, left his new walls defenceless and fled to Bassein. The Chinese advanced, occupied the city, and continued to pursue the Burman army as far as Taroup-mau, or Chinese point, a considerable distance below Prome. This was in 1284.

Colonel Burney has indicated that this is the same Chinese invasion which is spoken of by Marco Polo. Turning to that traveller (in Purchas, vol. III. 93,) we find that when the Great

* Judson's Life, I. 199, and Crawfurd, p. 491.

† J. A. S. B. Vol. IV. p. 402.

Khan minded to subdue the city of Mien, [the Chinese name for Burma] he sent a valiant Captain, and an army chiefly composed of jesters with whom his court was always furnished.

It is curious enough to contrast the contemptuous view of the Burmese enterprise here indicated, with the history of the same event as given by the Burmans in their chronicle. Instead of an army of jesters they represent the emperor to have sent a host of at least six millions of horse, and twenty millions of foot, to attack Pagán, and to have been obliged to reinforce these repeatedly before they could overcome the resolute resistance of the Burmese, who encountered the enemy near the mouth of the Bamó river.

From the mention of this locality it would appear that the Chinese invasion took place by the route still followed by the main body of the Chinese trade with Burma.

Pagán surprised us all. None of the preceding travellers to Ava had prepared us for remains of such importance and interest. I do not find any mention of Pagán and its temples before the middle of the last century, when Capt. George Baker and Lieutenant North were sent on a joint embassy to Alompra from the British settlement at Negrais. Lieut. North died at Pagán, or rather at Nyoung-ú, a considerable trading town at the northern extremity of the ruins. On his way down, Capt. Baker seems to have staid a week at "Pagang Youngoe." He mentions the great number of pagodas in the neighbourhood, and one in particular, "the biggest of any between Dagon (Rangoon) and Monchabue (Moutshobo the residence of Alompra,) kept in good repair, and celebrated by the people for having one of their god's teeth and a collar bone buried under it."*

Colonel Symes visited some of the temples on his way both up and down the river, and gives a somewhat vague account of the Ananda, which was then undergoing repair at the expense of the Prince Royal. He was told that the prince had collected gold for the purpose of gilding it, an intention which the size of the building renders improbable, and which certainly was not fulfilled.

Cox also describes the Ananda, and took some measurements with the intention of making a plan of the building.

* Dalrymple's Oriental Repertory, I. 171.

Among the ruins of the ancient city on the 8th February, 1826, the Burmese under the hapless Naweng-bhuyen, or "King of Sunset,"* made their last stand against Sir Archibald Campbell's army, which remained encamped there for some days afterwards. Havelock, in his history of the Campaign, notices the numerous monuments, but says; "the sensation of barren wonderment is the only one which Pagahm excites. There is little to admire, nothing to venerate, nothing to exalt the notion of the taste and invention of the people which the traveller might already have formed in Rangoon or Prome." It will be seen presently that we differ widely in opinion from Colonel Havelock.

The account that conveys the most truthful impression of Pagán is probably that contained in the travels of Mr. Howard Malcom, an American missionary traveller.

Mr. Crawfurd indeed devotes several pages of his admirable book to the detailed description of some of these buildings, and gives an engraving of that which he considered the finest architectural work among them. From his selection in this instance I utterly dissent. The temple which he has engraved is, as compared with the greater works at Pagán, paltry and debased. It is altogether uncharacteristic of the peculiar Pagán architecture; nor is it indeed well or accurately represented in the print. Mr. Crawfurd's descriptions too, an accurate observer as he is, fail somehow to leave with his readers any just impression of these great and singular relics. From that preference of his which has been referred to, it strikes me that he did not himself do justice to the grandeur or interest of these buildings, and therefore could not enable his readers to do so. With the assistance in illustration that we enjoy, we ought to be able to do better.

In Pegu and lower Burma, the Buddhist pagoda is seldom found in any other form than that of the solid bell-shaped structure, representing (though with a difference) the topes of ancient India and the Chaityas of Tibet, and always supposed to cover a sacred

* Otherwise Laya-thoon. He fled to Ava, and appeared before the king demanding new troops. The king in a rage ordered him to be put to death. The poor fellow was tortured out of life before he reached the place of execution.—Judson's Life, I. 295.

relic. Images of Gautama are often attached to these, but do not seem to be essential to them. The great Pagodas of Rangoon, Prome, and Pegu are celebrated examples of this kind of edifice.

The type of the principal temples at Pagán is very different, and they suit better our idea of what the word *temple* implies. Remains of this description but on a small scale, first attracted our attention at Tantabeng, a place on the east bank of the Iráwádi some miles above Yenangyoung.*

The buildings at Tantabeng† were numerous, had an air of great antiquity, and were, as far as we examined them, on one general plan. The body of the buildings was cubical in form, inclosing a Gothic-vaulted Chamber. The entrance was by a projecting porch to the east, and this porch had also a subsidiary door on its north and south sides. There were also slightly projecting door-places on the three other sides of the main building, sometimes blank and sometimes real entrances. The plan of the building was cruciform. Several terraces rose successively above the body of the temple, and from the highest terrace rose a spire bearing a strong general resemblance to that of the common temples of Eastern India, being like the latter a tall pyramid with bulging sides. The angles of this spire were marked as quoins, with deep joints, and a little apex at the projecting angle of each, which gave a peculiar serrated appearance to the outline when seen against the sky. These buildings were entirely of brick; the ornamental mouldings still partially remained in plaster. The interior of each temple contained an image of Gautama, or its remains. The walls and vaults were plastered and had been highly decorated with minute fresco painting.

Such is the substantial type of all the most important temples at Pagán, though when the area of the ground-plan expands from 30 or 40 feet square to 200 or 300 feet square, the proportions and details of the parts necessarily vary considerably.

* Mr. Oldham says that he saw a chambered pagoda as low down as Akouk-toung (below Prome.) There is a conspicuous one also at Thayet Myo. But they are comparatively rare anywhere below the point named, and never, I think, of the antique type here described.

† These have been photographed by Captain Tripe.

The Pagán ruins extend over a space about eight miles in length along the river, and probably averaging two miles in breadth. The present town of Pagán stands on the river side within the decayed ramparts of the ancient city, near the middle length of this space.

This brick rampart and fragments of an ancient gateway shewing almost obliterated traces of a highly architectural character, are the only remains at Pagán which are not of a religious description. If any tradition lingers round the site of the ancient palaces of the kings, who reigned here for so many centuries, our party missed it.

Of the number of the temples at Pagán, I feel scarcely able to form any estimate, the few days which we spent there having been chiefly devoted to a detailed examination of some of the most important. But of all sizes I should not guess them at less than eight hundred, or perhaps a thousand.

All kinds and forms are to be found among them; the bell-shaped pyramid of dead brick-work in all its varieties; the same, raised over a square or octagonal cell containing an image of the Buddha; the bluff knoblike dome of the Ceylon Dagobas, with the square cap which seems to have characterized the most ancient Buddhist Chaityas as represented in the sculptures at Sanchi, and in the ancient model pagodas in the Asiatic Society's Museum; the fantastic Bo-phya or Pumpkin Pagoda, which seemed rather like a fragment of what we might conceive the architecture of the moon, than anything terrestrial; and many variations on these types. But the predominant and characteristic form is that of the cruciform vaulted temple, which we have described above.

Three at least of the great temples, and a few of the smaller ones of this kind, have been from time to time repaired, and are still more or less frequented by worshippers. But by far the greater number have been abandoned to the owls and bats, and some have been desecrated into cow-houses by the villagers.

In some respects the most remarkable of the great temples, and that which is still the most frequented as a place of worship, is the Ananda.

"This temple is said to have been built in the reign of Kyan-yeet-tha, about the time of the Norman conquest of England. Tradition

has it, that five *Rahandahs*, or Saints of an order second only to a Buddha, arrived at Pagán from the Hema-wúnda or Himálayan region. They stated that they lived in caves on the Nanda-múla hill (probably the Nundá Deví Peak), and the king requested them to give him a model of their abode, from which he might construct a temple. The Rahandahs did as they were requested, and the temple being built was called *Nanda-tsi gun* or "Caves of Nanda." (Pl. I.) The term Ánanda, by which the temple is now known, is a corruption, arising from the name of Ánanda, the cousin and favourite disciple of Gaudama, being so well known to the people. The representation of a cave is a favourite style of building among the Burmese for depositing images.* This is not wonderful among the votaries of a religion which regards an ascetic life in the wilderness as the highest state for mortals in this world."†

Major Phayre mentioned another probable origin of the name of this temple, viz. from the Palee *Ananta* "the endless;" which seems to be supported by the fact that another great temple close at hand is called *Thapinyu*, "The omniscient."

To reach the Ananda we passed out through the principal eastern gate of the ancient city. The remains of the defences form a distinct mound and ditch, traceable in their entire circuit, and large masses of the brick work still stand at intervals, but I saw none in which any feature of the architecture, or portion of the battlements, was distinguishable. The gate has some remains of architectural design, and ornament of a rich character in plaster, with foliated pilaster capitals and festoons; but these remnants have been disfigured and obscured by the erection of two coarse modern niches with figures of Warders. A few yards beyond the gate are the square sandstone inscribed pillars mentioned by Mr. Crawfurd. Their appearance is suggestive of great antiquity and interest. But the expectation of the latter would probably be disappointed by an interpretation. The character appeared to be square‡ Bur-

* Several of the temples at Pagán are named in this way; e. g. *Shwé-hú*, "The golden cave;" *Sembyo-hú*, "The white elephant cave," &c.—H. Y.

† Note by Major Phayre.

‡ I do not know whether it has been noticed that the circular form of the ordinary Burmese character, as of the Ooria, the Tamul and several other South

mese of a very neat and uniform type, as indeed most of the Burmese inscriptions are, and very much superior in execution to what *our* lapidary inscriptions were a century ago.

In the precincts of the Ananda we entered a large group of monastic buildings, forming a street of some length. These in beauty of detail and combination, were admirable. The wood carving was rich and effective beyond description; photography only could do it justice.

Great fancy was displayed in the fantastic figures of warriors, dancers, *Nats* (spirits) and *Bilús* (ogres,) in high relief, that filled the angles and nuclei of the sculptured surfaces. The fretted pinnacles of the ridge ornaments were topped with birds cut in profile, in every attitude of sleeping, pecking, stalking, or taking wing. With the permission of a venerable and toothless poongyee we looked into a chamber which was a perfect museum of quaint and rich gilt carving, in small shrines, book chests, &c., not unlike the omnium gatherum of a Chinese Josshouse. One chamber contained, among other things, a neat model of a wooden monastery with its appropriate carving.

The most elaborate of these religious buildings is stated to have been built only a few years ago by a man of Ye-nan-gyoung; probably some millionnaire of the oil trade.*

In the same monastic street a brick building, in the external form of a Kyoung, contains a corridor entirely covered with rude paintings on the plaster. These are all, Major Phayre informs me, representations of *Jats* or passages in the life of Gautama in various periods of pre-existence. The greater part of the scenes appeared to depict the amusements and employments of ordinary life, such as feasting, hunting, weaving, looking at plays, being *shampooed*, and the like. The persons represented, like the marionnettes in the puppet plays, were all exhibited with pure white complexions. By a curious self-delusion, the Burmans would seem to claim that

Indian alphabets, is a necessary result of the practice of writing on palm leaves with a style. Certain of the sacred books which are written in the *square* character are inscribed with a black gum (the *thit-see*) used as ink.

* Photographed by Capt. Tripe.

in theory at least they are white people.* And what is still more curious, the Bengalees appear indirectly to admit the claim; for our servants in speaking of themselves and their countrymen, as distinguished from the Burmans, constantly made use of the term 'Kálá admi'—black man, as the representative of the Burmese *Kálá*, a foreigner.

In one part of the series were some representations of punishment in the Buddhist Hells. Demons were pictured beating out the brains of the unhappy with clubs, or elephants trampling on them, and in one place was a perfect picture of Prometheus; the victim lying on the ground, whilst a monstrous unclean bird pecked at his side.

From this monastic colony a wooden colonnade, covered with the usual carved gables and tapering slender spires, led to the northern doorway of the Ananda.

This remarkable building, with a general resemblance in character to the other great temples, has some marked peculiarities and felicities of its own. They all suggest, but this perhaps above them all suggests, strange memories of the temples of Southern Catholic Europe. The Ananda is in plan a square of nearly 200 feet to the side, and broken on each side by the projection of large gabled vestibules which convert the plan into a perfect Greek cross.† (Plate II.) These vestibules are somewhat lower than the square mass of the building, which elevates itself to a height of 35 feet in two tiers of windows. Above this rise six successively diminishing terraces connected by curved converging roofs, the last terrace just affording breadth for the spire which crowns and completes the edifice. The lower half of this spire is the bulging mitre-like pyramid adapted from the temples of India, such as I have described at Tantabeng: the upper half is the same moulded taper pinnacle that terminates the common bell-shaped pagodas of Pegu. The gilded tree caps the

* But so also thought some of the old travellers. Thus Vincent Leblanc says; "The people (of Pegu) are rather whites than blacks, and well shap'd." I think I have seen some brahmins fairer than any Burmans. But the average tint in Burma is much lighter than in India. One never, I believe, sees a Burman to whom the word *black* could be applied fairly.

† See also Capt. Tripe's photograph, No. ——.

whole at a height of one hundred and sixty-eight feet above the ground.

The building internally consists of two concentric and lofty corridors, communicating by passages for light opposite the windows, and by larger openings to the four porches. Opposite each of these latter, and receding from the inner corridor towards the centre of the building, is a cell or chamber for an idol. In each this idol is a colossal standing figure upwards of 30 feet in height. They vary slightly in size and gesture; but all are in attitudes of prayer, preaching, or benediction. Each stands, facing the porch and entrance, on a great carved lotus-like pedestal, within rails like the chancel-rails of an English church. There are gates to each of these chambers, noble frames of timber rising to a height of four and twenty feet. The frame bars are nearly a foot in thickness, and richly carved on the surface in undercut foliage; the pannels are of lattice work, each intersection of the lattice marked with a gilt rosette.

The lighting of these image chambers is perhaps the most singular feature of the whole. The lofty vault, nearly 50 feet high, in which stands the idol, canopied by a valance of gilt metal curiously wrought, reaches up into the second terrace of the upper structure, and a window pierced in this sends a light from far above the spectator's head, and from an unseen source, upon the head and shoulders of the great gilded image. This unexpected and partial illumination in the dim recesses of these vaulted corridors, produces a very powerful and strange effect, especially on the north side, where the front light through the great doorway is entirely subdued by the roofs of the covered approach from the monastic establishments.*

These four great statues represent the four Buddhas who have appeared in the present World-Period.†

* "A similar artistic introduction of the light is mentioned by Mr. Fergusson as characterising 'the great rock-cut Basilicas of India.'" (*Handbook of Arch.* 1. 313.) May this not have been imitated in the Ananda, and may the fact not be in some degree a confirmation of the legend, that caves were intended to be represented by these vaults?

† "They are said to be composed of different materials as follows:

The temple, like the other great temples here, is surrounded by a square enclosure wall with a gate in each face. "That to the north is the only one in repair. This was no doubt intended as the principal entrance, and has the image of Gautama placed there, but it is difficult to say why the western entrance was not chosen for this distinction,* as it is directly in sight of the Tan-Kyee hill and Pagoda, on the opposite site of the Irawadee, where Gautama himself stood with his favourite disciple, Ánanda, and predicted the future building and greatness of the city of Pagán. Perhaps the north was chosen as being the direction in which Gautama walked after the moment of his birth."†

In the centre of the vestibule on the western side stands cut in stone on an elevated and railed platform, a representation of the impression of Gautama's feet. In the galleries or corridors running round the building, disposed in niches along the massive walls, at regular distances apart, are numerous images of Gautama, and sculptured groups of figures illustrating particular events of his life. These have been covered over with a substance resembling *thitsee* (black gum resin) and vermilion.‡

"The image to the east is the Buddha *Kankathan* made of a sweet-scented wood called Dan-tsa-goo. To the west is *Ka-thaba*, made of brass. To the north *Gautama*, of Fir; to the south *Ganno-goon* of Jasmine-wood. Whatever the original material of these images may have been, it appears now that the outer coating of each is of plaster richly gilt over."—*Major Phayre.*

* Compare Cunningham's Topes of Bhilsa, p. 191. It there appears that at No. 1 Tope at Sanchi, within the enclosure and immediately facing each entrance, there is a large figure, once under a canopy. That to the east Major Cunningham considers to be "KRAKUCHANDA, first mortal Buddha; that to the south KANAKA; to the west KASYAPA; and to the north SAKYA SINHA" (Gautama). Hence it would appear that the figures in the Ananda were not placed arbitrarily, but according to orthodox Buddhistic tradition.—H. Y.

† Major Phayre.

‡ I extract the following detailed account of some of these curious groups from Major Phayre's notes. Lt. Heathcote, I. N. informs me that the number of these sculptures is upwards of fifteen hundred.

"Several, indeed, most, of the images of Gautama in this temple have a different physiognomy to those made by Burmese artists, and the Woondouk who accompanied me, asked if I did not notice a strong resemblance in the features to those Buddhist images in the compound of the Asiatic Society at Calcutta, which have

The outer corridor is roofed with a continuous flying buttress, or half pointed arch, abutting on the massive outer walls. The inner corridor and cells are pointed vaults.

been brought from central India. There is undoubtedly a great similarity, so that it is impossible not to conclude that these have been carved by Indian artists. The following are the principal figures and groups illustrating events of Gautama's life. A recumbent female figure richly clad with large earrings, and pendent ears, decked with numerous armlets from the wrist to the elbow; the figure and dress are entirely in the Indian fashion. The hair of all the female figures in these groups is bound up sideways in the form of a cornucopia, and in a fashion, certainly not Burmese. This is said to be the Princess Ya-thau-da-yá,* the wife of Prince Theiddat,† i. e. Gautama, before he left his father's kingdom and became a hermit. The four predictive signs displayed to the Prince, and which, convincing him of the vanity of all earthly things, determined him to leave his father's palace and go forth to the wilderness, are here displayed in separate groups. The Prince, from his chariot, sees the decrepid man, the diseased, the dead and decayed, and finally the Priest ordained. He chooses the latter state as the only refuge from the ills of mortality. In another sculpture is represented a stately female with her left arm round the neck of another, and both standing beneath a tree. This is the figure of Gautama's mother called Amay-dau-ma-ya,‡ beneath the Engyeen tree (Shorea robusta), when giving birth to her son while on a journey. She leans on the neck of her younger sister Gau-da-mee. A female attendant is near at hand. On the right of the mother is seen the infant, as if just born, but displaying his inherent glory, while three other minute figures of him denote his being received by the three higher orders of beings, Byahmas, Náts and men, the latter being lowest and receiving him on earth. This scene is repeated four times in the temple with some small variations.

It would be tedious to recount in detail the whole of these interesting sculptures; but I will mention that they include Prince Theiddat† in his palace surrounded by musicians and attendants, but dissatisfied with worldly splendour; then they show him taking a last look at his sleeping wife and child, before going forth to the wilderness; mounting his horse, and leaving, despite of all opposition; stringing a famous bow before the Court of his maternal uncle Thoopa-bood-da,§ the King of De-wa-da-ha, who then bestowed on him in marriage his daughter Ya-thau-daya.

All these and many others, the subjects of which, I did not recognize, but which evidently relate to events in the life of Gautama, have no doubt been chiseled by Indian artists at an early period.

* Yasodharâ.
† Siddhártha.
‡ Maha Máya.
§ Supra-Budha.

One of the peculiar features of the Ananda is the curved slope given to the roofs both of the porches and of the main building, as if preserving the extrados of the arch which lies beneath. In all the other temples the roofs are flat. This, with the massive gables which are thus formed at the ends of the porches, and the great scrolls, if we may call them so, at the wings of these gables, probably go far in producing that association with the churches of southern Europe to which I have alluded.* Still these scrolls are perfectly Burman, and seem identical with the horn-like ornaments which are so characteristic of the Burman timber buildings. Here they are backed (another unique circumstance) by lions rising *gradatim* along each limb of the gable or pediment. The windows also of the main building, standing out from the wall surface with their effective mouldings, pilasters, and canopies, recall the views of some of the great Peninsular monasteries.

But not the exterior only was redolent of kindred suggestions. The impression on us, (I speak of Major Allan, Mr. Oldham, and myself,) as we again and again paced the dim and lofty corridors of the Ananda, was that of traversing some sombre and gigantic pile appropriated to the cabals and tortures of the Inquisition. No architecture could better suit such uses. And in the evening, as I sat in the western vestibule sketching the colossal idol before me, the chaunted prayers of the worshippers before the northern cell boomed along the aisles in strange resemblance to the chaunt of the priests in a Roman Catholic cathedral.

Of the details of architecture I shall speak below, but before proceeding to describe any of the other temples, it may be well to notice the material of which they are built. This, I believe to

I should have mentioned that on the outside of the building, and about three feet above the ground, glazed tiles are set closely all round it, having rude figures of monsters on them, some riding camels and other animals unknown in Burmah. These have Pali inscriptions on them, intimating that the figures represent the soldiers of the evil spirit, who sought to alarm Gautama from his resolution of becoming an ascetic and attaining Buddhahood.

* Compare the elevation of the entrance to one of the vestibules of the Ananda with that very common façade of Italian churches. The analogy in the composition is, I think, very striking. The R. C. Church at Agra has a façade of this type.

be in every case the same, viz. what we call in India *kucha pukka* work, that is to say, brick cemented with mud only. Mr. Crawfurd supposed the temples to be of brick and lime mortar. But I satisfied myself that this is not the case, and that the penetration of the plaster, which had been applied to the walls and corridors, into some of the joints had misled him.* We are not indeed accustomed in India to conceive of *kucha pukka* edifices two hundred feet in height. Of these it is to be said that they are so massive as to be practically almost solid; so that the vaults and corridors rather resemble excavations in the mass than structural interiors. It is also to be said, however, that they are built with a care and elaboration which I never saw bestowed on a *kucha pukka* structure in India, and which the Burmans of the present day seem remotely incapable of in brickwork of any kind. On the outside at least, in the better buildings, every brick has been cut and rubbed to fit with such nicety that it is difficult, and sometimes not possible, to insert the blade of a knife between the joints. The arches and semi-arches are carefully formed of bricks moulded in the radiating form of voussoirs. The peculiarity of these arches is that in general the bricks are laid edge to edge in the curve of the arch, instead of being laid parallel with its axis as among other nations. The exterior archfaces of the smaller doors and windows are, however, laid in the European way, with the bricks cheek to cheek.

The bricks are usually about 14 inches by 7, (I here speak from memory,) and well moulded, but they are not very well burnt.

Such being the substance of the structure, all the ornamental finish is consequently executed in the plaster, which, even without view to ornament, would have been essential to the preservation of the buildings.

Where the plaster has been kept in repair, the buildings remain apparently perfect. Where the original plaster has decayed, and has not been renewed, the temples are in ruins. But it is in the latter only that we can learn to do justice to the spirit of art that

* Mr. Oldham notes his impression that the Bauddhi temple is built with lime mortar.

adorned these monuments. The renewals and repairs have been executed by barbarous and tasteless hands. Of this I shall speak more fully by and bye.

The second great temple of Pagán is the *Thapinyu*—"the Omniscient."

It is stated to have been built in the reign of A-loung-tsee-chyoo Men, grandson of the king who erected the Ananda, about the year of our era 1100.*

It stands within the ancient walls, some five hundred yards to the south-west of the Ananda, and its taper spire, rising to a height of two hundred and one feet from the ground, overtops all the other monuments.

Its general plan is not unlike that of the Ananda, but it does not, like the latter, form a symmetrical cross. The eastern porch alone projects considerably from the wall. The body of the building forms a massive square of more than one hundred and eighty feet to the side.

The characteristic of the Thapinyu is the great elevation of the mass before considerable diminution of spread takes place, and the position of the principal shrine high above the ground.

We have first a spacious two-storied basement like that of the Ananda, then two receding terraces. But here the usual gradation is interrupted. The third terrace, instead of rising a few feet only like the others, starts at one leap aloft to a height of some fifty feet in a truly massive and stupendous cubical donjon, crowned again at top by a renewal of the pyramidal gradation of terraces, and by the inevitable culminating spire.

Within this donjon, in a lofty vaulted hall opening by pointed gateways to the east, north and south, and directly under the apex of the spire, sits the great image of the shrine. This is, with one exception, the only instance I have seen in these temples, in which

* The dates given are those traditionally ascribed to the temples, and are the same with those already given by Crawfurd. Major Phayre considers the inscriptions at Pagán, so far as he had time to examine them, to confirm these dates, very remarkable as they are under the circumstances.

the core of the building beneath the central spire had been hollowed into a chamber.

The principal shrine of the temple being thus in the lofty upper tower, the basement contains little of interest in the interior arrangements. There is on the ground level but one corridor, with images in the halls opposite the north, south, and west doorways. The main, or eastern, doorway is faced by a staircase leading to the upper terraces, but first to a curious mezzanine or entresol, forming a double corridor, running round the basement story at the level of the second tier of windows. This also is a peculiarity of the Thapinyu.

The Gauda-palen is the third and last of the greater temples which have been kept in repair. (Pl. III.) It dates from the reign of Na-ra-pa-tí-tsí-thú, about A. D. 1160.

Crawfurd explains the name as signifying, "the throne of Gauda" —a Nát or spirit. Major Phayre, though unable to obtain a satisfactory solution of the name, expresses strong disbelief that a Buddhist temple could be named after a Nát.

Though of great size, and rising to a height of 180 feet, this temple covers a considerably less area than the two already described. It is within the city walls, and stands on lower ground than they do; but being nearer the river it is very conspicuous in approaching Pagán from the southward. Gleaming in its white plaster with numerous pinnacles and tall central spire, we had seen it from far down the Irawadí, rising like a dim vision of Milan cathedral. This enchantment it lost of course on nearer approach, though still strongly suggestive of south-European church architecture, more so perhaps than any other of these buildings except the Ananda. It is cruciform in plan, and stands on a low parapetted terrace irregularly following the outline.

It is more compact and elevated in proportion to its bulk than the two former buildings, but resembles them in general character, exhibiting a massive basement with porches, and rising above in a pyramidal gradation of terraces, crowned by a spire and *htee*. The latter has broken from its stays at one side, and now leans over almost horizontally, having torn with it the acorn of brick-work which caps the spire, and threatening speedy downfall.

E.



From the last terrace, below the spire, we had a noble prospect of the vast field of ruined temples stretching north, east, and south, and Mr. Grant devoted many laborious hours to sketching this panorama.

All these three buildings have been kept in repair, and "beautified" in some churchwarden spirit, more to their loss than gain. One other important temple within the city walls has also been kept in repair. Its date is given by Mr. Crawfurd as about the year 1200. This is the *Baúddhi** described and delineated by him. It is different in style from the other temples and very inferior in size, majesty, and art. The basement is a quadrangular block of no great height, supporting a tall spire strongly resembling that of the ordinary Hindu shiwala, and still more strongly the *sikra* of the Jain temples near the river Barákar, and of some of the ancient Hindu temples delineated by Mr. Fergusson, such as those at Bhúbaneswar in Orissa and that at Barolli in Rajputáná. The latter, in general effect, has a considerable resemblance to the Baúddhi as seen from a distance.† Both base and spire are covered with niches, bearing seated Gautamas, and interspersed with ornamental pannels and mouldings. This gives the building a very rich appearance at a little distance, but, closely viewed, the execution is execrably rough and inaccurate, and there is an absence of the whole spirit of art visible in what I must call the greater and purer works.

In these there is an actual sublimity of architectural effect, which excites wonder, almost awe, and takes hold of the imagination in a manner that renders apology for them as "Burmese," absurdly out of place.‡ There is no such spell in Baúddhi, which only recalls the Hindu temple, of which a thousand specimens infinitely superior in material and workmanship are to be seen at Benares

* *Baúddhi* signifies the Banian tree.

† See *Fergusson's Ancient Architecture of Hindustan*, Pl. VII., and Capt. Tripe's Photograph, No. —

‡ "We were all struck with awe" says Mr. Oldham, in his Journal "at the littleness of our individual might in the presence of such evidence of combined power and exertion."

and Mirzapur, to say nothing of the older and finer works in other parts of India, of which I have scarcely any personal knowledge.

Omitting further consideration of the last named building, the architectural elements of which the great temples are composed, and hundreds of smaller ones in the same style, are nearly the same in all, though combined in considerable variety.

The pointed arch is found in all, and is almost universally the form of the doorways. It is, universally, enclosed in a framework, or façade, exhibiting an arch dressing of a triangular or almost parabolic shape, drooping in cusps of a characteristic form, and surmounted by a sort of pediment of graduated flame-like spires and horns of a very peculiar character. This cusped arch and these flamboyant spires and horns are, in a modified form, part of the style of ornament universal in the elaborate timber monasteries of Burma. The style seemed to me more natural in the latter material, and I felt more inclined to believe that the masonry ornamentation had been, (as in so many other climates,) adapted from that of timber, than the architecture of the temples modified to suit the timber structures. This opinion has changed since my return to Calcutta, and access to drawings has enabled me to trace the prototype of this flamboyant ornament in the temples of Southern India. Whether again this pattern did not originate in a preceding timber model is too remote a question. Even in the cave temples of Western India, Mr. Fergusson traces distinctly the limitation of timber construction.

In the greater doorways, this cusped arch face and pediment is generally supported at each side by a semi-arch and semi-pediment of like charcter, at a lower level.

All these arches and semi-arches rest on regular pilasters with base, capital, and cornice, the singular resemblance of which, both in general character and in many of the details of mouldings, to the pilasters of Roman architecture is startling, perplexing, and unaccountable to me by any theory I have yet heard propounded, if anything like the true date has been assigned to these buildings.

The following extracts from Mr. Oldham's journal well express the feeling with which several members of the mission involuntarily viewed these structures with reference to their origin.

"So strongly unlike all other Burman buildings, can these have owed their origin to the skill of a western Christian or Missionary, who may have adopted largely the ornamentation of the Burmese, and ingrafted much of their detail and their arrangements on his own idea of a temple? May not the true cross-like plan of the Ananda be thus symbolical, and may he not, in the long-trusting hope of a zealous worshipper of Christ, have looked forward to the time when this noble pile might be turned from the worship of an unknown God to the service of the Most High." "I can't think any Burman ever designed or planned such buildings. They are opposed to the general plan of their construction. The Shwe Koo [one of the minor temples] might possibly be the work of Burman mind, but I fancy not the others; or, if they did design them, the Burmans of those days were very different from the Burmans of the present day."

Such an impression, I know, was almost irresistible at times when on the spot. But, without going much into argument on the subject, I cannot think it probably founded in truth. There is not, I believe, reason to believe that any missionaries, or Europeans of any kind, found their way to these trans-gangetic regions in the days when these temples were founded.* If there had been

* At the suggestion of a friend I annex an abstract of the chronology of Burmese intercourse with the west. However imperfect, this abstract, which has been compiled with considerable labour, will be, I trust, interesting, independently of the question of the origin of these temples.

Ptolemy is, I believe, the only ancient geographer who gives any particulars of these countries. He quotes his predecessor Marinus of Tyre (who lived about A. D. 100) as referring to the log of one Alexander, who had voyaged along these shores as far as *Thinae* and *Cattigara*. Great difference of opinion has existed as to the identification of these and the hitherward localities which he names. Some, considering that the Aurea Chersonesus, which was passed in reaching the two places above mentioned, can only answer to the Peninsula of Malacca, have carried their locality as far eastward as the southern extremity of Camboja. But Gosselin* has shewn a strong reason to believe that the Aurea Chersonesus really represents the protuberant Delta of the Irawadee, and that Thinae is rather to be

* *Recherches sur la Geographie des anciens, Par P. F. J. Gosselin.* Paris, 1813. Vol. III.

communication we must go further back for it. And the points of resemblance are rather to *Roman* architecture, properly so called,

identified with Tenasserim. There are abundant difficulties in the way of either interpretation.

It is an interesting subject, but a great deal more learning and leisure than I possess would be required to discuss it properly. Two arguments, however, may be mentioned which appear strongly to favour Gosselin's theory. Ptolemy describes the various rivers of the Chersonesus as mutually communicating, a circumstance which could not apply to the Malay Peninsula, but which applies excellently to the waters of the Delta. These rivers, whose embouchures he names Chrysoana, Palanda and Attabas, would therefore be three of the principal outlets of the Irawadee. Again, immediately westward of the Chersonesus he places the Sinus Sabaricus, and in this gulph the mouths of the river Besynga. Now, a little below, in his sketch of the hydrography of India beyond the Ganges, the Geographer says distinctly; "From the range of Mæandrus flow down all the rivers beyond Ganges, *until you come to the river Besynga.*" This remark seems infallibly to identify Mons Mæandrus with the Aracan Yomadoung and the river Besynga with the Bassein branch of the Irawadee.

The Rev. Mr. Mason in his valuable book, "*The Natural Productions of Burma,*"* following the more common arrangement of maps of ancient geography, which makes the Sinus Sabaricus represent the Gulph of Martaban, traces Besynga in the Solwen, called by the Talaings *Be-khung.* But it may be suggested that *Bathein-khyoung* (river of Bassein, in Burmese) affords at least as strong a resemblance. And it is curious that this very gulph of Negrais, which we take to be the Sinus Sabaricus, is called by several of the old travellers "the Sea of Bara."†

Where the data are so vague, attempts at the identification of names are rather amusing than profitable. But a few may be mentioned. *Sada* suits in locality as well as name with Sandoway, which is mentioned at a very early period of Burmese history.‡ *Zabai* has been identified by Gosselin with Tavoy. In Ptolemy's list of inland cities to the north of the Chersonesus occurs the name of *Mareura metropolis.* The identity of this has been suggested§ with the ancient city of *Mauroya,* which, as Col. Burney tells us from the Burman histories, pre-

* Published at Maulmain 1856. See under the head of Ethnology, p. 427.

† Vide Cæsar Frederick in *Purchas,* II. 1717 and Gasparo Balbi, *id.* p. 1724. At the same time, be it said, I feel some misgiving that this *Bara* may be only the *Bar* of Negrais. In Wood's map, at the beginning of Syme's Narrative, one of the mouths of the Irawadee is called *Barago,* and I believe Barago Point is still the name given by mariners to the extreme point of the delta.

‡ See Col. Burney in J. A. S. B. V. 163.

§ By Col. Hannay in his *Sketch of the Singphos,* 1847, p. 32, and by Mr. Mason, I. p. 445.

than to anything of later date, so far as I know, before the fifteenth century. And even this Roman character is so mixed up

ceded Tagoung as the seat of the Sakya kings. Mauroya is now known as Mueyen, a town not far south from Bamó.

In *Tugma metropolis*, an inland city of the Aurea Regio, we have perhaps the venerable city of Tagoung; in *Tharra*, an inland city of the Chersonesus, Tharawadee, or perhaps Thare-khettara, the ancient name of Prome; *Satyrorum Promontorium* we might be tempted to find in the point of Bilú-gyoon or Ogre's Island, off Maulmain. At the northern confines of Mons Mæandrus, Ptolemy, true to this day, places the *Nanga logæ* or Nága Lóg, which he defines as truly to mean 'the Naked Folk.' Eastward towards the Sinæ are the Kakobæ, whom Col. Hannay* finds in the Ka-khyens called by themselves Kakoos; and near the shores of the Magnus Sinus we find the Kadopæ or Kadotæ who may be the Karens, called in the Talaing language, according to F. Buchanan, *Kadoon*. Beyond them we get among tribes of Pirates, who are said to have skin like that of a hippopotamus, not penetrable by arrows; so we may decline to follow Ptolemy any further. It may be noted that though the geographer characterises several tribes in these parts as Anthropophagi, he affixes "Emporium" to the names of various places on the coast, which seems to indicate civilization and foreign trade.

Why these lands should have been termed the lands of silver and gold (Argentea Regio, Aurea Regio, Chersonesus Aurea) may appear obscure, as they are not now remarkably productive of those metals. There are, however, gold-washings on a small scale in many of the rivulets both of Pegu and of the valley of the upper Irawadee and of the Kyendwen, which may have been more productive in ancient times. And the Argentea Regio may probably (as suggested by Col. Hannay†) have been the territory including the *Bau-Dwen*, or great silver mine on the Chinese frontier, which is believed to supply a large part of the currency of Burma. Indeed Aurea Regio may be only a translation of the name Sonaparanta, which is the classic or sacred appellation of the central region of Burma between the Irawadee and the Kyendwen, always used to this day in the enumeration of the king's titles. These regions may moreover have been the channels by which the precious metals were brought from China, and the mountains near the sources of the Irawadee which are said to be very productive of gold, and possibly even at that remote period the profuse use of gilding in edifices may have characterised the people, as it does now.

It seems, however, most probable that this practice was introduced with Buddhism.‡ Yet even at the period of the first Buddhistic mission to this region,

* As above p. 2. † Ditto.

‡ The elaborate gilding of chapels and monastic cells in India and central Asia is mentioned by Fahian, the Chinese pilgrim in the fifth century. (*See Laidlay's translation*, p. 18, &c.)

and blended with other touches and details so utterly un-Roman and original, that one cannot conceive so spirited and effective a fusion to have been produced by any chance European aid.

at the conclusion of the third great synod, B. C. 241, it was known in India as "*Suvarna Bhumi*" the Golden Land.*

According to Mr. Mason, the ancient capital of the Talaings (of the Toungthoos according to the tradition of the latter) was Thadung, or Satung, a city whose traces still exist between the mouths of the Salwen and the Sitang. Suvannabumme, he adds, but unfortunately stating no authority, is still the classic Pali name of Satung.†

In the beginning of the fifth century, Buddhaghosa, a Bramin of Magadha, visited Ceylon and there revised the Buddhist scriptures and re-translated them into Pali. He carried his version with him to Pegu, and there made it known. In A. D. 1171, a mission was sent from Burma to Ceylon, and ten years subsequently five men deeply versed in the Burmese scriptures came from Ceylon to Pagán. One of the number is said to have been a Cambojan, and another a Cingalese.‡

The intercourse with Ceylon appears to have continued more or less till a late period. It was not always an intercourse of merely a religious character. In one instance, more particularly referred to at page 55 of the text, we find a king of Ceylon carrying a hostile armament against the Burman countries (A. D. 1153);§ and in another we find 'Brama, king of Pegu,' as he was called by the Portuguese, sending to solicit the daughter of a king of Ceylon in marriage (about 1566.)‖

It is scarcely possible that any intercourse should go on at the present day, if we may judge by the surprise and incredulity of the Burmese courtiers when told by Major Phayre that the sacred island of Lankadwipa also belonged to the English. The last remarkable instance of intercommunication between Ceylon and Burma, of which, I am aware, occurred towards the end of the last century,

* "Sono and Uttaro were deputed to Suvarna Bhumi or Golden Land. As this country was on the sea-coast, it may be identified either with Ava, the Aurea Regio, or with Siam the Aurea Chersonesus, 6,000,000 of people are said to have been converted, of whom 25,000 men became monks, and 1500 women became nuns." Quoted from the Mahawanso by Major Cunningham in his Bhilsa Topes, p. 118.

† *Mason*, as above p. 427. He also says that Maubee in the delta of the Irawadee was called *Suvanna nadee*, River of gold. Sobana emporium and Sobanas occur as the names of a town and river in Ptolemy's list. And Chrysoanas, his name for one of the rivers of the delta, looks like a translation of the same.

‡ Mason—p. 453.

§ It is curious that in the reign of the preceding monarch of Burma, Alountseethoo, it is said in the chronicles that "the governors of Bassein, of other districts in the Talaing country, *the Kala governor of the island of Ceylon*, and he of Tenasserim, having rebelled, were put down, and their countries taken possession of." (*Mason*, as above.)

‖ *Hist. of the discovery and conquest of India by the Portuguese*, London, 1695.

To return to details. The angles of all the chief buildings are

when the maintenance of caste-distinctions among the priesthood by the kings of Candy, provoked the low-caste monks to organize an expedition to the orthodox Buddhists of Burma, with a view to the restoration of equal rights.

That religious visits were made during the middle ages of the Burmese countries to the sacred spots of Buddhism in India, is proved by an inscription in Burmese at Buddha-Gaya, discovered by the Burmese envoys who were sent to Lord W. Bentinck in 1831-33. Some doubt attaches to the reading of the date and the determination of the king whose repair of the temple it commemorates. Burney ascribed it to the reign of Aloungtsee-thoo, A. D. 1105.

There is no mention of Pegu, by the Mahomedans of the 9th century, whose travels were published by the Abbé Renaudot and are given in Pinkerton's and various other collections, nor so far as I can learn by any Western traveller till the time of Marco Polo.

Indeed, the first opening for Christian travellers into Asia was in quite another direction, and much further to the North. Monks of Italy, France and Flanders jostled each other at the court of Kara Korum; and Mongol ambassadors found their way to Paris and Northampton,* when as yet all that Europe knew of India was derived from Strabo and Arrian.

It is probably Pagán which Marco Polo speaks of under the name of Mien, "a great and noble city, the head of the kingdom." *Mien* is said by Col. Burney to be the Chinese name of Burma.† But Marco does not speak as if he had himself been in the country, and there is only one unmistakeably Burmese feature in his story. This is in the description of two towers in pyramid fashion which a certain king caused to be built near his sepulchre; "upon the top, round about the balls" he says, "many little gold and silver bells were hanged, which at the blowing of the wind give a certain sound." The date of the expedition which Marco Polo relates is between A. D. 1272 and 1290.

In 1444, Nicolo di Conti,‡ a Venetian, returned from five and twenty years' travelling in the East. He visited Racha (Aracan) on a river of the same name, and thence "after seventeen days passing desert hills, came into a champaign country." He must therefore have gone over the Aeng pass, or some other pass of the Aracan Yoma. He speaks of the river of Ava, as greater than the Ganges; the city of Ava, as fifteen miles in circuit, &c., the kingdom itself he calls Macin

* Rémusat, *Mémoire sur les Relations Politiques des Princes Chrétiens, &c. avec les Empereurs Mongols*, 1824, p. 154.

† J. A. S. B. IV. 400. Dr. Buchanan says that the Chinese of Yunan call the Burmese *Lau meen*, As. Res. V. 223. In DuHalde's Maps, a distinction is made between the kingdoms of *Yaoua* and *Mien*.

‡ *Ramusio*, I. 340. The narrative is very imperfect, which is to be regretted, as it bears the stamp of honesty. A few additional particulars are given in Purchas, II. 159, from another version of di Conti's travels.

formed into pilasters such as we have spoken of supporting a regu-

(*Maha-chin* doubtless, a name often applied in India to the little known Eastern kingdoms indiscriminately). He is the first traveller, I believe, who mentions the white elephant, and the name of Ava, which has not existed a century.* He speaks also of the Burmese fashion of tattooing the body, as common both with men and women. The latter do not now practise it, though among their Khyen neighbours it is almost confined to the women.

Di Conti makes the singular statement that the people in their daily prayer said, "God in Trinity keep us in his Law." This, which at first sight looks like fiction, is really an evidence of his veracity. He had doubtless heard of "the three precious ones," the triad of *Buddha*, *Dharma*, and *Sanga*, the Buddha, the Law, and the Clergy; (see note by Rémusat in Pilgrimage of Fa-hian, Cal. 1848, p. 42).†

In 1496, Pegu was visited by Hieronymo da Santo Stephano, a Genoese, who is, I believe, the first European by whom Pegu is distinctly mentioned. He speaks of it as a great city ruled by a "Gran Signore" who possessed 10,000 elephants. He was prevented from visiting Ava by war between the two nations.‡

About the same time or a little later, we find at Pegu another traveller, Lodovico Barthema of Bologna. He gives few interesting particulars, but mentions "great canes" (bamboos) "as large as a barrel," and like all the travellers to these parts, speaks much of the rubies, the original locality of which they all assign to a city, or mountainous region called Capelan, beyond Ava. He also speaks of Pegu and Ava as at war.§

With the extension of European discovery in the beginning of the 16th century, European traders and Portuguese adventurers began to haunt the coasts of Pegu. The first Portuguese traveller known to us is Ruy Nunez d'Acunha, who was sent thither by Alphonso d'Albuquerque in 1511.‖

* He is also the first traveller who mentions a strange, obscene, and barbarous custom, which is spoken of so repeatedly by all travellers during the next 200 years, that it seems impossible to doubt its having existed, though I believe there is not now the slightest trace of it; unless the practice be so, which some of the Burmese warriors are said to retain, of inserting a piece of metal under the flesh to make themselves invulnerable. Some old travellers ascribe to the Siamese and Shans as well as the Burmese, the custom alluded to. The prevalence of such a custom seems a strong corroboration of the idea expressed by Ritter (*Erdkunde V.* 171,) that the Burmans have not long emerged from barbarism. There is a deep element of barbarism in the Burman character, but looking to Pagán and other evidences, it may be doubted whether their civilization, such as it is, was not fully greater eight centuries ago, than one century ago. The modified practice referred to above is witnessed to by Mr. Howard Malcom, who was allowed by one of the Christian converts at Ava to take several amulets of gold from under the skin of his arm. (I. 307.)

† In the letter which the king of Ava wrote to the Governor General in 1830, His Majesty speaks of his "observing the three objects of worship, namely, God, his precepts, and his attendant or priests," (Buddha, Dharma and Sanga.)

‡ *Ramusio Navigationi et Viaggi*, Venetia MDLXIII. I. p. 345.

§ Ditto Ditto, p. 165.

‖ *Purchas*, II. 1681.

lar and bold cornice, and resting on a regular and varied series of

The travels of Odoardo Barbosa to this coast about 1520 are given in Ramusio's collection. He speaks of "Verna" as a distinct kingdom from Ava, as many later travellers do. Apparently Toungoo is meant.*

About the same time Antony Correa was sent by the Portuguese to negotiate a treaty with the King of Pegu.†

The celebrated Ferdinand Mendez Pinto was in these countries as a military adventurer in 1545, and professes to have been present at the sieges of Martaban and Prome. His relations are full of extravagant statements, and a great deal of his geography is probably absolute invention. Still it is evident that he was in the country. Among names still easily recognizable which he mentions, are Dalaa (Dalla near the coast of the Delta), Digon (Dagon, *i. e.* Rangoon), the Province of Danaplu (Danobyu), Anseda (Henzada), and Meletay (Meaday). The last he correctly describes as a fortress twelve leagues up the river from Prome.‡

Many of the old maps depict a certain "Lake of Chimay" somewhere in the far interior of the Indo-Chinese countries, whence issue all the great rivers of Eastern India.§ But Ferdinand Mendez is probably the only traveller who declares he had *seen* it. He gives it, however, a different name.

During the constant wars that went on between Siam, Pegu, Toungoo, Ava, and Arracan, during this century, some Portuguese partisans appear generally to have been found on either side. Thus in 1544, when Martaban was besieged by "Pará Mandará (as he is called by the Portuguese writers)‖ king of the Burmas" (i. e. of Toungoo),¶ we find among his force some galleys manned by Portuguese under John Cayero, and five years later when the same prince invaded Siam and attacked the capital, he had with him 180 Portuguese under James Surez de Melo, whilst the king of Siam in his besieged city of Odio* had 50 Portuguese under James Pereyra.†

Some years later when this conquering king of the Burmas had been murdered

* *Ramusio*, p 316. † *Modern Universal History*, VI. 162.

‡ Elsewhere he speaks of the *kingdom* of Meletay, which other travellers have reproduced as a kingdom of *Melintay*. It is curious that Malanda is one of Ptolemy's names for an inland city in this region.

§ Such a notion seems to have been generally diffused, probably from India with the Buddhist legends. Doubtless it originated in the fact of the rise of the Indus, the Sutlej, the Ganges, and the Tsanpoo within a space of little more than two square degrees from that great world-water-shed on which lake Mansarowar lies.

‖ Probably Men-tara-gyee Phra, a common appellation of Burmese monarchs.

¶ According to the history consulted by Sangermano, the kingdom of Toungoo was founded by a Prince of Pagán in 1252. The conqueror, Pará Mandará, whom Sangermano calls Mentrasvedi, was the thirtieth prince of the line.

* Odia or Yuthia, the former capital of Siam, above Bankok.

† *History of the Discovery and Conquest of India by the Portuguese.* London, 1695. II. 134-8.

basement mouldings which run all round the building.

by the "Shemîn of Satân," (Sitang or perhaps Thadung), and the latter contested the throne with a member of the old royal house of Pegu, whom the Portuguese call Shemindoo, he was killed before Pegu by the fortunate shot from the musket of Gonzalo Neto. But in 1552 a second prince of Toungoo again got possession of Pegu. This is the king called by the old writers Aleagar, or "Brama king of Pegu,"* who extended his conquests over Ava, Mogoung, Jangomai (Zimmé), the west of Yunan, and other adjoining states, and the wealth and splendour of whose court made Pegu so famous in Europe as an empire of fabulous magnificence.

Casper de Cruz, a Dominican, appears to have been to the East between 1550 and 1560. He speaks of the "Brames" as "a great people, very rich of gold and precious stones; chiefly of rubies; a proud and valiant nation. *The country very scarce of victuals.* They wear their clothes painted or wrought. They are somewhat like the Chinas in their faces; they have very rich gallant shippings garnished with gold, in which they sail in the rivers; they use vessels of gold and of silver; their houses are of timber very well wrought. The kingdom is very great. They have not commonly war with the Chinas, because of the great mountains that are between the one and the other, and because the Chinas are well fortified on that side,"† &c. All which is very accurate.

In 1557, Bomferrus a Dominican missionary returned from Pegu. He had spent three years in learning their language and mysteries, that he might preach among them, "but was soon forced to give over and return into India; for they could not endure to hear any better knowledge than they had."‡ This missionary appears to have given a tolerable account of Buddhism as it exists in these countries.

In 1569, Cæsar Frederick, a Venetian merchant, was in Pegu, and gave a very interesting account of that country. That same "Brama of Toungoo" was on the throne, who was said to have twenty and six crowned heads at his command, and to be able to bring into the field a million and a half of men of war!§ "For people, dominions, gold and silver" Mr. Frederick hesitates not to say, "he far excels the power of the Great Turk, in treasure and strength."

These expressions seem utterly preposterous, when we see what Pegu and Burma are in our day. All the old travellers use similar superlative terms in speak-

* His name in Burmese history is Tshen-byu-mya-yen "Lord of many white elephants." He is the personage called by Pinto, "The Chaunigrem." "He was born on a Wednesday" says the chronicle, "and on the day of his death the great Pagoda fell into ruins, an inundation covered the whole city, and a shower of rubies fell from heaven." *(Sangermano,* p. 45.)

† In *Purchas,* III. p. 169.

‡ *Purchas,* V. p. 507. This Friar according to Sir Thomas Herbert, "came home professing that he had rather with St. Anthony preach among pigs than among such a swinish generation." *Herbert's Travels,* p. 359.

§ That is, more than twice the whole population of the British province of Pegu in 1856.

These cornices and basements are, in almost all the buildings,

ing of the Peguan monarchy at this time. Yet Frederick, and Fitch who followed him a few years later, are men who give a sober and true account of other matters, in which we still may compare their descriptions with facts as they are.*

It may perhaps be remarked that only at the end of the last century the spectacles of Col. Symes appear to have shewn him in Burma a magnificent and civilised empire, including a population which he estimated at seventeen millions. Later experience has proved that the Colonel's view of the magnificence and civilisation was as exaggerated as his estimate of the population.

But making allowance for a similar tendency to the over-estimation of so distant a region by the older travellers, in reading their narratives it is impossible to resist the conviction that the lower provinces at least of the Irawadee exhibited in the 16th century a much more flourishing and wealthy community than now exists in the delta, and we have, in the subsequent history of the country, the causes of a great deterioration. The splendour of the Peguan monarchy was very short-lived. In the time of the son of the conquering prince came a succession of internal and external wars, during which the country was harassed and devastated, both by the cruelties of the savage king, and by invasions from Arracan, Siam, Toungoo and Ava, by all which Pegu was reduced to the depths of desolation and misery; insomuch that Purchas, in a curious chapter "on the destruction and desolation of Pegu,"† collected from the writings of numerous eye-witnesses his contemporaries, thinks it appropriate to observe, that "the natives of Pegu are not quite extinct, but many of them are fled into other kingdoms." Notices of the history of Pegu are defective during the greater part of the 17th century, and I do not know what further wars took place during that period. But towards the middle of the century following came its temporary re-assertion of independence and even of supremacy, and its rapidly succeeding subjection to the vengeance of Alompra. It is not surprising that Pegu should never have recovered from calamities so repeated and disastrous. History scarcely justifies the expectation that countries should recover, even in long periods of comparative repose, from such universal and thorough devastation. And the habits of the Burman races are not favourable to increase of population. A singularly small portion of their children live to maturity.‡

* See for instance Frederick's vivid and accurate account of the bore in the Sitang, (*Purchas*, II. 1716,) which I have lately had the opportunity of comparing with that of a good observer, Mr. T. Login.

† V. p. 500.

‡ I have just read in the course of my ordinary duties a report by Mr. T. Login on a projected canal to the Sitang, from the Pegu river at a point below the ancient capital. He speaks incidentally of traces of extensive cultivation in tracts which now scarcely shew two souls to the square mile. The vast ruined pagoda of Mahkau, of which Mr. Login speaks in the same report, doubtless represents the site of the castle of Maccao, mentioned by the old travellers as

formed of the same succession of members, but it is only from the

Returning from this digression, we find in 1583 Gasparo Balbi, a jeweller of Venice, visiting Pegu with a stock of emeralds. As with all the travellers about this period, his ship made a port in the river of Bassein or one of its channels, called by them Cosmi or Cosmin,* which seems at that time, distant as it was from the capital, to have been the principal port of Pegu.

In entering the Bassein river his description of the gilded beacon temple of Modaen on Pagoda point, and of the swarms of flies attracted by the *ngapee* manufacture at Negrais, are pleasant to read in their graphic truth, after three centuries nearly have past.

From Cosmin the travellers appear to have taken a route through the ramified channels of the lower Delta, and Balbi mentions several great and fair cities by the way.† In seven days they reached Dalla (near the mouth of the Rangoon river,) and next day the "citie of Dogon" (Rangoon,) where he describes the great Pagoda, &c., in a manner still very recognizable.

Mr. Ralph Fitch, merchant of London, is the first Englishman who has given an account of a visit to Pegu. He follows the same route as the last traveller, by Cosmin to Dalla, Sirian and Pegu.

Fitch's account of the capital appears to be borrowed to some extent from that of his predecessor Frederick, which I have partly extracted in illustration of my description of Amarapoora.‡ From Pegu he extended his travels to "Iamahey which is in the country of the Langeiannes whom we call Iangomes; it is five and twenty days' journey north-east from Pegu." This Iamahey or Jamahey is undoubtedly the Shan town of Zinmé, which has been very rarely reached by any European traveller in modern times. Fitch describes it as "a

the place where goods for the royal city were discharged; and where the king had his gardens and his boat-races.

During the three years that have elapsed since the war that terminated in the annexation of Pegu, in some of the districts which, directly or indirectly suffered most, such as Padaung and Mendoon (West and North-west of Prome) scarcely any favourable reaction has taken place.

The writer had an opportunity of seeing the state of the former small district between the Arracan hills and the Irawadee, once covered with beautiful and thriving towns and villages, in travelling from the Arracan coast to Prome in March 1853, just as the war was closing. And one may conceive how deadly and enduring would be the results of war, repeated year after year in such a country, by various hosts of barbarians. Such, all these races eminently are in war, whatever they may be in peace.

* I had always supposed from the narratives that Cosmin must have been Bassein itself. But in Wood's map (1795), the last which gives the name, Cosmin is placed on another channel, to the eastward of the main Bassein river.

† Frederick states that at all the villages on this route "hennes, pigeons, eggs, milke, rice, and other things be very good and cheape;" a very different state of things from the present, when our hungry surveyors complain that they can get neither "Hennes" nor eggs, let alone "other things" for love or money.

‡ See Major Phayre's Mission to Ava page 160, (unpublished.)

study and comparison of the remains of the unrepaired and unbar-

very faire and great Towne with faire houses *of stone*," which is remarkable, if true.

From the accounts of all the travellers of this period we derive the impression of a thriving trade in the ports of Pegu. Martaban, we are told by Frederick and Fitch, was frequented by many ships from Malacca, Sirian by ships from Mecca (Mocha probably) and Achen, Cosmin by ships from Bengal, St. Thomé (Madras) and Masulipatam.

Fitch was at Pegu in the end of 1586, and the kingdom seems still to have stood in its glory.*

But only eleven years later, in 1598, Nicholas Pimenta, Visitor of the Jesuits in India, relates the destruction of the Peguan monarchy, and the miserable state of the country, as reported to him by ships which arrived at St. Thomé when he was organizing a Mission for Pegu.

In March 1600, Boves, another Jesuit, writes that he was in the country when the king besieged by the kings of Arracan and Toungoo surrendered, and was put to death. "It is a lamentable spectacle," says the Padre, "to see the banks of the rivers, set with infinite fruit-bearing trees, now overwhelmed with ruins of gilded temples and noble edifices; the ways and fields full of sculls and bones of wretched Peguans, killed or famished, and cast into the river in such numbers that the multitude of carcases prohibiteth the way and passage of any ships; to omit the burnings and massacres committed by this, the cruellest tyrant that ever breathed."†

After his victory, the king of Arracan made over the port of Syrian to Philip de Brito, a Portuguese partisan leader.‡ De Brito, however, quarrelled with the king of Arracan, and went to Goa to obtain the support of the Viceroy. During his absence his followers proclaimed him king of Pegu. He continued to carry things with a high hand for some years, capturing the son of his former patron the king of Arracan, for whom he demanded a ransom of 50,000 crowns;§ and sometime afterwards he treacherously seized the person and treasure of the king of Toungoo,‖ with whom he had made alliance. In 1610 a traveller says of de Brito; "He yet also domineereth and careth for nobodie."¶ He had married his son Simon to a daughter of the king of Martaban,* which province had appa-

* *Purchas*, Vol. II.

† Boves in Purchas, II. 1748.

‡ Do. Do.

§ *Hist. of Disc. and Conq. of India by the Portuguese*, III. 138 etc. and *Purchas*, V. p. 514.

‖ Hence called by the Burmese *Kala-ya-men*, "The king whom the Kalás seized." *Col. Burney in* J. A. S. B. IV. 404.

¶ *Relations of strange occurrents* by Peter Williamson Floris; in *Purchas*, I. 322.

* *Hist. of Discov. and Conq.* as above.

barized temples that their full intention and true character can be

rently risen again to brief independence during the anarchy which succeeded the fall of the Peguan monarchy.

In 1613, however, the king of Ava appeared on the field, and with a large army besieged de Brito in Sirian, where the Portuguese leader made a desperate defence. The king of Arracan, whom he had so grievously offended, sent 50 vessels to his assistance, but they were captured by the Burmans. At last de Brito was betrayed and carried to the king, who caused him to be "spitted," or impaled, and set up on an eminence overlooking the Fort. In such misery he continued to live for two days. His wife Donna Luisa de Saldanha was sent to Ava with the other captives.*

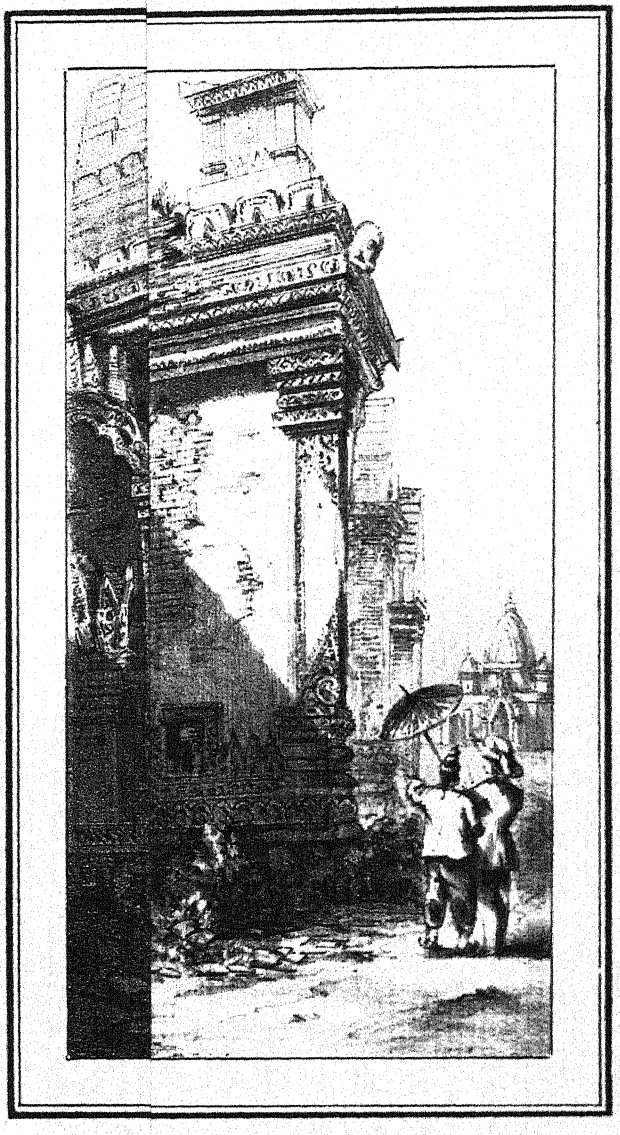
The dominance of Ava over the lower provinces dates from this time.

The king after having been crowned at Pegu, sent his brother to master the southern states. He soon conquered Tavoy, and proceeded to besiege Tennasserim. Here Christopher Rebello, an outlaw from Cochin, with 40 Portuguese and 70 slaves, in four galliots, attacked and routed the Burmese flotilla of 500 vessels.†

A short time afterwards the king of Ava, fearing the vengeance of the Portuguese, should they unite with his rivals of Arracan and Siam, sent ambassadors (to Goa apparently) to the Portuguese Viceroy, to apologise for the killing of de Brito, and offering to join in an attack on Arracan. The Viceroy agreed, and sent an envoy in turn, but he was treated with true Burman nonchalance, and nothing resulted.‡

Though Mr. Fitch, and possibly other wandering English merchants, had visited Pegu in the preceding century, no English convoy had at that time come to the Indian seas for trade. The East India Company was first established in 1599, when Pegu was in the depths of its desolation. Hence, though our trade had spread far to the eastward, no attempt at intercourse with the Irawadee delta had taken place up to 1618. Curiously enough, the first intercourse originated from the eastward. A year or two before the period named, the English factor at Siam, Lucas Anthonison by name, sent one Thomas Samuel to Zengomay (Zimmé),§ to inquire into the prospects of trade there. Zimmé had been subject to the great king of Pegu, but during the misfortunes of that monarchy in his son's time, had been taken by the Siamese. The king of Ava, whose power had risen, as we have seen, on the fall of Pegu, and who was extending his conquests over most of the provinces that had been subject to the latter, obtained possession of Zimmé whilst Samuel was there, and carried him, with other foreigners, to Pegu. There he died, and his property was seized by the king.

* *Hist. of Disc.* as above, III. 191. See also *Modern Universal Histy.* (1781,) vol. VI. p. 202; and *Purchas*, V. 502 and 514.
† *Hist. of Disc.* as above, III. p. 197.
‡ *Hist. of Disc.* &c. p. 255.
§ Called by the Siamese Chang-mai.



I.

YULE.

made out.*

Every main cornice, for instance, is crowned with a sort of battle-

The relator, William Methold, in the supplement to Purchas's Pilgrims, calls the monarch king of Pegu, and at Pegu he appears to have held his court. But he was in fact properly the king of Ava.

News was brought of Samuel's death to Masulipatam where Lucas Antheunisen happened now to be factor for the Company. He took the opportunity of sending two agents carrying a letter and present for the king, professedly to apply for the restoration of Samuel's effects, but also with a small adventure to make trial of the trade.

The agents were unfaithful. They misappropriated the proceeds of the trade, and wrote most discouraging accounts of their treatment. But they were sent back in April 1619, with most of Samuel's property, as well as a present from the king and a letter inviting trade.*

The history at this period is very obscure, but it would appear that some while the time mentioned, British intercourse with the Burman countries became more free than it ever was again up to the annexation of Pegu. Dalrymple ascertained from old documents at Fort St. George, that the English had settlements† at Pegu and Ava, as well as at Sirian, and even at a place on the borders of China, which he conjectures to have been Bamó. The Dutch, who had a considerable trade with Burma, likewise possessed factories in the Upper Provinces, and are said to have been at this time in occupation of Negrais.

On some dispute with the Burmese Government, the Dutch threatened, or attempted, to invite the interference of the Chinese. On this, both Dutch and English were ejected.‡

In 1658 or 1659, when a Chinese force invaded Burma, and attacked the capital, the guns on the ramparts of Ava are said to have been served by a party of native Christians under a foreigner named *Methias Acosta*, a name which Col. Burney happily suggests to be intended for "Mr. Cotton."§

* A small but beautiful example of the Pagán architecture in its typical form is the *Sembyo-Kú* or "Cave of the white Elephant."

* Methold in Purchas, V. 1006.

† He says at the beginning of the 17*th* century. But it could not have been earlier than the circumstances mentioned by Methold.

‡ This is Dalrymple's account. I find, however, in Valentyn's great "Beschryving van Oost Indien," or Description of the Dutch East Indies, (Dordrecht and Amsterdam 1726) vol. V. pt. II. p. 126, that the Dutch had a factory at Syriam from about 1631 till 1677, with subordinate factories at Ava and other places. The Dutch Government of Coromandel sent several embassies to Ava also. Valentyn ascribes the breaking up of the trade to the constant wars that were going on in those regions.

§ *J. A. S. B. VI.* 126.

mented parapet assuming in the repaired buildings a coarse incongruous appearance in rude plaster-work. In the temples which

The trade seems to have revived towards the end of the century. In 1680 and 1684, the Company's agents had made unsuccessful attempts to re-establish factories in Burma or Pegu. In 1686-7 their attention was turned to Negrais; a survey was made of the island, and it was taken nominal possession of.

In 1695, Nathaniel Higginson, governor of Fort St. George, sent Mr. Edward Fleetwood and Captain James Lesly as envoys to the court of Ava. Their objects were to obtain the settlement of a factory at Sirian, the release of English captives, and of a sloop belonging to one Bartholomew Rodriguez, which had been confiscated, and the restoration of the effects of one Adrian Tilbury, a merchant of Fort St. George, who had died at Martaban.

They carried presents to the amount of about 1000 pagodas, and a letter from Governor Higginson, written in a very humble style. The presents were a regular mercantile speculation. The envoys were to try to get as much as possible in return, "asking for more" if they found it feasible, and were themselves to get ten per cent. on the proceeds as an incitement to do their best.*

Mr. Fleetwood does not appear to have been a gentleman likely either to impress the Burmese court with an exalted impression of his country, or to bring back with him any interesting particulars of theirs. He seemed to think he had made a great *coup* in providing himself with a letter of introduction to the king's mistress. The mission had as little success as it deserved under such auspices, but the re-establishment of the factory at Sirian was conceded. Two years later (1697) Mr. Bowyear was sent as chief of the factory at Sirian, and with a mission to the court similar in its objects to Fleetwood's. It appears from the instructions that the return-presents made to Fleetwood's mission had been profitable to Mr. Higginson, and he was not indisposed to repeat the speculation. But he honourably adds; "If the returns of the present shall stand in competition with, or hinder, the restoring of Bartholomew Rodriguez his cargo, I had rather forego the receiving of any returns for the present, than hinder the restoration of the cargo." No record of Bowyear's mission has been found, and it is probable that he did not proceed to Ava, as the king died just after his arrival in the country.†

In 1709, a Mr. Richard Alison or Allanson was sent as envoy to Ava. No account of his mission has ever been printed. It appears from Hamilton's 'New account of the East Indies'‡ that this gentleman was twice deputed to the court of Ava. But the date of his other mission is unknown. From this point I shall

* Higginson's Instructions to Fleetwood. In Dalrymple's Oriental Repertory, II. p. 337 et seq.

† *Bayfield*; see below.

‡ Edinburgh, 1727, Vol. II.

remain in their original state, such as *Sudha Muni* (of which I have unfortunately no drawings,) and *Sembyo-ké* we find these

content myself mainly with a brief note of events, as the remaining history of British intercourse with Burma has been fully related in a very able and interesting paper by Dr. Bayfield, which is printed in the appendix to Pemberton's Report on the Eastern Frontier.*

The agent of the Company at Sirian, Mr. Smart, appears to have acted with duplicity during the contests of the Burmese and Peguans for the possession of Pegu, which ended in the temporary supremacy of the latter. In 1743, the factory was burnt by them, and the establishment was withdrawn.

In 1752, the king of Tavoy, then for a short time independent, invited an establishment. But his terms were unreasonable, and no movement was made to act on his offer.

In 1753, a factory was established on Negrais, which was in fact taken possession of in the Company's name.

In 1755, we find a factory under Captain Baker existing at Negrais, during the continued contests between Peguans and Burmese, the latter being again in the ascendant. The chief at Negrais urged on his Government that we should take a decided part with the Burmans. But, about the same time, some English ships at Dagon (Rangoon) took part with the Peguans.

In July of this year, Captain Baker and Lieut. North (who died at Pagán on the way up) were sent by the resident at Negrais on an embassy to Alompra at Mout-sho-bo. The usurper laughed at the idea of assistance from the English, and the mission had no result. Captain Baker took observations on his way, and made a map of the river, which is given by Dalrymple.

In 1751, Dupleix the Governor General of French India had sent an ambassador to the king of Pegu, and obtained the concession of a factory at Sirian. But in 1756, the Government at Pondicherry, contrary to an engagement of neutrality into which the factory had entered with Alompra, having sent succours to the Peguans, and these having fallen into the hands of the conqueror, he massacred the officers, and carried the rest of the French as prisoners to Ava.† From these prisoners some of the Burman Christians of the Dibayen district are said to be descended.

* "Historical Review of the Political relations between the British Government in India and the Empire of Ava, from the earliest date on record to the present year; compiled by G. T. Bayfield, acting assistant to the Resident in Ava, and revised by Lt.-Col. Burney. Ava, 15th December, 1834."

For the facts of the remaining history, I have made free use of this Review. The original authorities are, for the times of Alompra, Dalrymple's Oriental Repertory; for Symes's first Mission and Crawfurd's, their published narratives; for the other Missions, the original papers in the records of the Indian Government. Where I have used other authorities they are referred to.

† *Sonnerat, Voyage aux Indes Orientales.* Paris 1806, III. 5.

battlements to be but the settings of embossed and glazed, and sometimes also richly coloured, tiles, which in fact must have

In 1757, Alompra addressed a letter to the king of England, written on gold adorned with rubies, which he delivered to a Mr. Dyer and others who visited him at Rangoon.

In June of the same year Lieut. Newton, who was in charge of Negrais, deputed Ensign Lister to go to the king with the pompous title of ambassador extraordinary. He overtook Alompra on the river going up from Rangoon, and by dint of some considerable bribery obtained the king's signature to a treaty conceding in perpetuity Negrais, and ground for a factory at Bassein, with freedom of trade, in return for a pledge of military assistance fom the Company against the king's enemies. This treaty had never any practical effect.

1759. The greater part of the establishment at Negrais was withdrawn. And on the 6th October in that year the whole of the remaining Europeans, with many natives, were treacherously massacred by the Burmese. The king was said to have suspected that the factory had been in communication with his enemies the Peguans.*

In 1760, Captain Alves was sent with letters and presents from Holwell, Governor of Fort William, and Pigot, Governor of Madras, to demand satisfaction for the massacre, and liberty for the prisoners. Alompra had died on his Siamese expedition a few months before Captain Alves's arrival at Ava. He found the city in rebellion, and the new king besieging it. He was plundered and otherwise shamelessly treated. The prisoners were released, but the idea of satisfaction was scouted, and Ensign Lister's treaty was ignored.

The factory at Bassein was never re-established, but one appears to have been kept up at Rangoon at least till 1782.

In 1769, the French East India Company sent an envoy to the court of Alompra's son Senphyoo-yen,† with the view of re-establishing their trade. They obtained from the king the grant of a factory and other privileges, but these concessions were never acted on.‡

1794. The Burmese, who had conquered Aracan in 1783 began to make inso-

* On the shore of the mainland, close to the north of Negrais is now being laid out the new Port of Dalhousie. "The whirligig of Time has brought about its revenges. The kingdom of Pegu, which the rough hunter conquered, has past from his house to the hands of that power whose servants he treacherously slew; and the city that will rise on the site of his crime will borrow a name from the woody dells of Esk." *Blackwood's Magazine*, May 1856.

† Called by Sonnerat "Zekin-médou," the Shembuan of Symes.

‡ *Sonnerat*, as above, p. 8. This author, whose voyages took place between 1774 and 1781, has a dissertation on the advantages of taking possession of Pegu, for which he calculates that 1000 or 1200 Europeans would suffice, as the Peguans would join them. He commences, prophetically; "Il est certain que les Anglais chercheront un jour à s'emparer du Pégu." III. p. 60.

formed a briliant "polychromatic" (to use the slang of the day) coronet to each successive terrace of the temple.

lent and threatening demonstrations on the Chittagong frontier; and it was known that the French were directing their attention to Burma as a good fulcrum for attack or intrigue against British India. For these and other reasons, the Governor General (Sir J. Shore) deputed an embassy to Ava under Captain Michael Symes of His Majesty's 74th Regiment.

It cannot be said that this mission was treated with much respect, or advanced the estimation of the British power among the Burmans. Captain Symes was treated as the envoy of an inferior power, and was undoubtedly himself imposed on by Burmese pretensions. The whole colouring of his narrative tends to leave a very exaggerated impression of the civilisation and magnificence of the Burmese empire.

In 1796, in accordance with the permission conceded in the document given to Captain Symes, Captain Hiram Cox was sent to act as resident at Rangoon on the part of the Government of India. He had charge of some articles which the king had commissioned through Symes. But he was not to proceed to court, unless summoned.

He was summoned, and reached Amarapoora in January 1797. There, or in its neighbourhood, he remained during nine weary months, bearing with singular patience every kind of slight, indignity, and imposition, the history of which it is quite painful to read. In October he returned to Rangoon, and in February he was recalled by the Government, who (misled perhaps by the impression that Symes had given) intimated their opinion that the conduct of the court must have indicated personal dissatisfaction with Captain Cox. And the king and his ministers were addressed, notifying Cox's recall and offering to appoint another gentleman in whom the Vice-president had the greatest confidence, should His Majesty desire it.

Captain Cox's private journal was published in 1821, some years after his death.

Several insolent communications were in the following years received from the Viceroy of Rangoon, and the Governor of Aracan, and in

1802, Captain, now Colonel, Symes was sent again by Lord Wellesley. His mission was attended by an escort of 100 sepoys, and equipped in a style characteristic of the Governor General. He was to seek a treaty of alliance, the cessation of extortionate exactions on trade, the establishment of a resident at court and of a consul at Rangoon, and to claim Negrais or compensating commercial advantages.

The mission was a total failure. The envoy was treated for three months with the most mortifying neglect and deliberate insult, and at last quitted without an audience of leave. It is not to be wondered at, that the Colonel published no narrative of his second mission.

In the basement mouldings, as truly seen in the older buildings, the upper limb is an ogee carved in bold foliation of truly classical character (see Pl. IV. Fig. 17.)

This, in the restorations and beautifications, even of such buildings as the Ananda, has been, by the coarse and tasteless perceptions of the modern architects, degraded into an idiotic and misplaced repetition of the battlemented crown of the cornice.

The basement again always centres in a sort of entablature or

In May 1803, the apprehension of French intrigue in Burma again induced the Government to send Lieut. Canning as agent to Rangoon. But in consequence of the insolent violence of the Ye-woon, who was in charge of the government there, and insisted on opening all letters, Lieut. Canning judged it best to return in November.

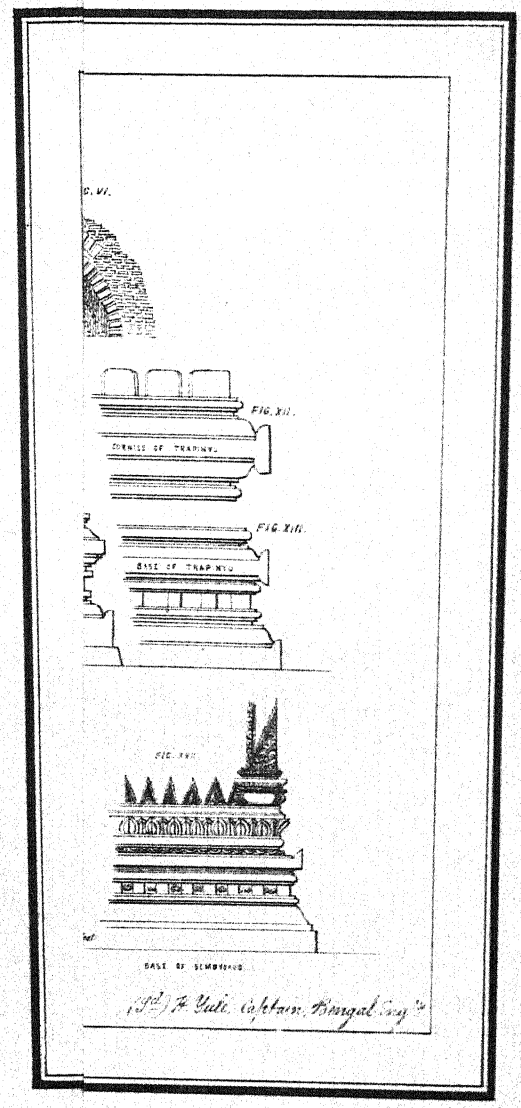
In 1804, an outrage was perpetrated on a British ship from Penang, which put into Bassein for wood and water. No notice was taken of this.

1809. Capt. Canning was despatched as agent to Rangoon, with a special view of explaining to the Burmese the nature of our blockade-system, which was then enforced on the French isles, to protect British interests, and to watch the progress of the French in Burma.

He proceeded to Amarapoora at the king's desire. He met with much better treatment than either of the two last missions to the court, and the explanation, which was the main object of his mission, was effected. But he did not leave without receiving from the Woongyees two most impertinent letters to the Governor General.

1811. This year commenced those disturbed relations on the Aracan frontier, which eventually led to the war of 1824. A native of Aracan called King Bering, or Khyen-bran, embodied a number of followers within our territory, and invaded Aracan. In September Capt. Canning was sent to give explanations on this matter, and to complain of the conduct of the Governor of Rangoon towards British trade. Whilst he was still at Rangoon a gross violation of our territory was committed by the Governor of Aracan. Additional instructions were sent to Canning to complain of this and to demand the withdrawal of the Burmese troops from the frontier. In consequence of a repetition of the offence he was recalled, whilst repeated orders came from Amarapoora to send him to court, by force if necessary. He despatched the presents, but returned to Bengal in August.

This was the last Mission up to the breaking out of war in 1824. It is not necessary to follow here the repeated and complicated encroachments and provocations which led to that event. War was declared on the 5th March, 1824, and the peace of Yandabo was signed on the 24th February, 1826.


PL. VI.
FIG. XII.
CORNICE OF TRAP No 1.
FIG. XIII.
BASE OF TRAP No 1.
FIG. XIV.
BASE OF SEMBOYNOO.
Lt. Yule. Captain. Bengal Engrs

YULE.

dado set with alternate recessed pannels and projecting blocks (Pl. IV. Figs. 11, 13.)

The true meaning of these has fortunately been preserved in Ananda as well as in some of the more shattered buildings. In these the pannels are occupied by tiles moulded in relief. In the Ananda the tiles represent a variety of somewhat rude groups of figures and animals with alphabetic characters over them.

In other smaller buildings we have seen them glazed and artistically embossed, representing a variety of ornamental figures, sometimes the Greek honeysuckle (Fig. 6), prancing horses, pelicans, &c. In the Sudha Muní these impannelled tiles were, like those of the battlements, coloured in enamel.

Most of the shafts as well as bases and capitals of pilasters, the cusped arches, flamboyant spires of the door and window canopies, &c., and often too the cornice and basement mouldings, appear to have been originally sculptured (in the stucco) with great richness of effect.* And often this effect, in foliage and other ornamentation, is produced by very slight indications and incisions in the plastered surface. These incisions have been made with such instinctive art, and suggestive skill, that, viewed at a little distance, the most elaborate modelling could scarcely have produced the desired effect more completely.

All this disappears before the ruthless hand of the restorer, and is replaced by a rude plastered surface scratched without taste, art or result. The old work, rough as it is sometimes, is the bold rough sketch of an accomplished artist. The work of the repairer, compared with it, is like a school-boy's chalkings on the wall.

I may now venture to point out a few analogies bearing on the origin of this remarkable architecture.

My attention has not previously been turned to ancient Hindu architecture, and over a great part of this Presidency there are scarcely any remains affording opportunity to become acquainted

* See examples of this stucco-work in Pl. IV. Figs. 14, 15 and 16, for which I am indebted to the kind help of Mr. Oldham. Capt. Tripe's illness on our second short visit to Pagán unfortunately prevented the photographic illustration of these and other details.

with it. But the result of the search that I have been able to make in the Library of the Asiatic Society, since my return from Burma, will perhaps establish the fact that nearly the whole of the *details* are of Indian origin.

I have noticed the resemblance of the spire of these Pagán temples to the common Hindu shiwala. But its absolute identity with a more ancient form of Hindu temple will be seen by a comparison of the spire of the Ananda (Pl. I.) with the ancient Indian "Vimána" as given by Mr. Fergusson.

The most universal and characteristic feature in the Pagán architecture is perhaps the pediment, or canopy, of flamboyant spires over the doors and windows. Compare Figs. 8 and 10 of Pl. V. copied from Ram Raz's Essay on the Architecture of southern India, with the window of Dhamayangyi at Pagán as shewn in Pl. IV. Fig. 4, and it will be impossible, I think, to doubt that this feature was derived from India.

The resemblance is still closer in the doorway of the great temple of Dambúl in Ceylon, as given in Sir J. E. Tennent's book on Christianity in that island. I have not been able to find any good views of the Ceylonese remains, otherwise I doubt not that the closest type of the Burmese architecture would be traced in these.

Compare again the horned and grinning heads which occur so constantly at Pagán in the ornamentation of pilasters, as in Figs. 8, 9 and 14, of Pl. IV. with heads of a similar character over the doorways in Ram Raz's examples just referred to. If there is any doubt as to the identical origin of these it must disappear when we find at Pagán such a head (Pl. IV. Fig. 7.) occupying exactly the same position as in the Indian doorway, and surrounded by the same flame-like spires in both cases. This Gorgon-head, as Raffles calls it, in nearly all the ancient Javanese temples, occupies the same position over the doorways. It is there usually on an exaggerated scale; but it assumes its most monstrous form in the "Tiger-cave" of Cuttack, where a colossal tusked and grinning head envelopes the whole entrance. (See Journ. As. Soc. of Bengal, 1847.) This Gorgon-head, as well as the cusped arch and indications of the flamboyant points, are seen in a plate, by the late Major Kittoe,

of a niche at Badeswur containing an image of Párbatí. (J. A. S. B. vol. VIII. p. 384.)

Take again the monstrous trunked and toothed creatures, disgorging scroll-work, over the pilasters of the Dhammayangyí window just referred to, and set them by the Indian monsters in almost similar position, as shewn in Figs. 1, 3 and 8, in the Plate of Analogies. Who can doubt that the one is derived directly from the other?

Look at the festoon ornament of beads and tassels pendant from the mouths of monstrous grinning heads, as seen in the Gaudapalen (Pl. IV. Fig. 9,) and in the Sembyo-kú. It is one of those details which at first sight were strongly suggestive of European origin. But it is absolutely identical with the adornments of a pillar in a temple on the Madras coast given by Col. Mackenzie in his collections. Similar ornament is seen in the Assam remains described in a late number of the Asiatic Society's Journal, on a pillar at Barolli in Rajpootana given by Fergusson from Todd's Rajasthán; and on a pillar at Jajeepoor in Cuttack, figured by Major Kittoe in the Journ. As. Soc. Ben. Vol. VII. p. 54; as well as in two sculptured pillars found in the sands of the Ganges near Pubna, which now stand at the door of the Asiatic Society's Museum in Calcutta. A modified rendering of the same, Mr. Oldham tells me, he found on some of the fragments at Benares College which are said to have been brought from the ancient Buddhist Pagoda of Sarnath near that city, and very lately on a sculptured stone which he lighted on among the forests of the Nurbudda valley. Remark those curious little peaks or *acroteria* which terminate so many of the flat projecting mouldings in all the Pagán temples: (e. g. see Pl. IV. Figs. 9, 10, 11, 12, 13 and 17.) It is a feature found all over India. It is given by Mr. Fergusson as one of the characteristics in his generalized drawing of a *Mantápa*, or vestibule of an ancient Hindu temple; it appears in Lieut. Maisey's drawings of Kalinjar; it is seen in pillars represented by Col. Mackenzie; and the closest resemblance, not only in this feature but in the manner of its application, will be seen at a glance on comparing the gate of Bhubaneswar in Orissa as given by

Mr. Fergusson, with that very common form of doorway at Pagán, of which an elevation is shewn in Pl. IV. Fig. 10. The same feature is seen in the Assam column figured by Capt. Dalton, and is found on a large scale in the temples of Java (see Raffles, vol. II.)

The remaining figures in the plate of analogies have been brought together for the sake of less defined resemblances of character. Enough, however, has been made out, I think, to shew that all, or nearly all the details of work at Pagán must have had an Indian origin. But this is far from removing the perplexity connected with the origin of these buildings. Grant that all details were borrowed from India. But where shall we find in India any model of the composition? where anything approaching the classical beauty of the Sem-byo-kú, or the stupendous architectural majesty of the Thapinyu and the Ananda?*

The Burman, rejecting indeed, in the pride of his philosophy, the idea of an Eternal Divinity, but recognizing the eternal sanctities of nature and conscience, has reared nobler fanes and far more worthy to become the temples of the true God than the Hindu with his deities so numerous and impure.

I have said above, that nearly all the details at Pagán must have had an Indian origin. But this does not apply to *construction*. The arches and vaults, which are such marked features in the Pagán temples, are quite unknown to ancient Hindu architecture. "As far as my own knowledge and researches go," says Mr. Fergusson, "I am certain that I have never been able to detect any trace of an arch in any ancient (Indian) building." (*Ancient Archit. of Hindoostan*, p. 12.)

Having no more to say on the general subject of this architecture, I have still to offer a few notices of remarkable temples not yet described in this Report.

* Perhaps the nearest analogy in general form is to be founded in the rock-cut *Raths* (as they are called) of Mahábálipuram near Sadras.

There is also something, suggestive of the Pagán style in the general arrangement of the great Javanese temples described by Raffles, (including the peculiarity of the cruciform plan,) as well as in some of the details which I have already noticed.

About three quarters of a mile south-east of the ancient city is the great temple of Dhamayangyi.

This temple which dates from the reign of Kalá-Kyá Men ("The king dethroned by foreigners")* about A. D. 1152, in its general arrangement resembles the Ananda more closely than any other, and covers about the same area, though the greater bulk of the vestibules, and greater height of the main walls of the building, must have rendered it, when perfect, even more imposing. Views of some of the architectural details of Dhamayangyí are given in Pl. IV. Figs. 7 and 8. The upper part of the temple is all in sad decay, and the six terraces and crowning spire have well nigh become a shapeless pyramid of brick rubbish. The lower story, however, is in good general preservation; and, as it is nearly stript of its plaster, it affords a good opportunity of examining the admirable workmanship of these buildings, of which I have already spoken. Where the plaster-work remains, it shews a boldness and richness superior to anything in the more perfect temples. For the usual horn-like wing of the door pediments is here generally substituted a monstrous animal disgorging upcurving scrolls from his gaping jaws (see Pl. IV. Fig. 6.) Here too are seen in perfection those perplexing pilasters with their quasi-Roman mouldings (Figs. 6 and 7); and here, to my delight, I discovered a perfect flat brick-arch over a window.† There were two of these in each wing of the temple, and one of them in particular was as perfect in construction, in joints and radiation, as any London builder could turn

* Col. Forbes *(Eleven years in Ceylon)* quotes the allusion in Crawfurd's Narrative to this dethroned founder of the temple, as remarkably confirmatory of a passage in Turnour's Epitome of the Singhalese chronology.

This passage states that "the king of Cambodia and *Arramana*" having inflicted many outrages and insults on Singhalese subjects and ambassadors, the king Praa-krama-bahoo, who came to the throne A. D. 1153, sailed with a great armament, landed in *Arramana*, vanquished the enemy, and obtained full satisfaction.

Turnour says that *Arramana* "comprises probably the provinces between Arracan and Siam." It may perhaps be referred to *Mramma*, the true form I believe of *Burma*.

† See this arch in Pl. IV. Fig. 3.

out. No suggestion of European or Indian aid would help here. At least I doubt if in the 12th century the flat brick-arch was known in Europe,* and I know that in the 19th it is one of the most difficult things to get done decently in India. In one of the other buildings, Mr. Oldham told me that he saw not only a flat arch, (not, however, correctly radiated,) but also a segmental discharging arch over it.

The interior of Dhamayangyí contains but one accessible corridor. All the openings leading further inward have been built up, for some unknown reason. I did not succeed in finding the stairs leading to the roof. Major Phayre was more fortunate: his opinion is that this temple never was finished or plastered in the upper part. I think there are good reasons on the other side, but the question is perhaps not worth arguing.

The arch of the western main entrance, and probably the others, have the edges of the intrados entirely composed of roughly dressed stone voussoirs, regularly arranged as headers and stretchers.† In the corner of the building and in the minor arches, stones are introduced occasionally as binders.‡ This has been noticed by Mr. Crawfurd, as well as the inscribed stones which are found in the northern and western vestibules. In the latter, opposite the entrance, is a remarkable group of sitting figures.§

The Dhamayangyi is encompassed by a high brick-wall of some 250 yards square. This wall is built with as much care and skill, and with almost as elaborate mouldings, as the edifice which it encloses, and consequently it remains very perfect. More beautiful brick-work could scarcely be seen anywhere. The gates in the centre of each side are, however, dilapidated.

Half a mile or more eastward of the Dhamayangyí is another remarkable temple called the *Sudah Muní*. In construction it

* The only flat *stone*-arches that I recollect to have seen in mediæval buildings are in the side-aisles of Roslin Chapel, in the chimney-piece of the great hall in Glammis castle, and in the magnificent Saracen gateway of Cairo called Bab-el-Fitoor.

† See Pl. IV. Fig. 1.

‡ Do. Fig. 2.

§ Given well in Capt. Tripe's Photograph (No.)

resembles the Thapinyu, but is smaller, and has never been repaired in later times. The brick-work of the upper part is much dilapidated, as much so nearly as that of Dhamayangyi. But that this temple was finished there can be no doubt. The plaster on the walls of a staircase leading to the upper-terraces, at the height of a man's shoulder, was rubbed and polished, as if by the passage of multitudes during ages of occupancy.

Major Phayre did not visit this temple, and I have not learned to what date it is attributed. No one of the remaining structures gives so vivid an idea of what these buildings must have been in the brilliancy of their original condition. The plaster-work of the pilasters and mouldings which remains is of a highly florid and artistic character; the battlemented crown of the parapet is set with large tiles embossed and enamelled in colours; the dado of the basement with smaller tiles in the form of diamonds, rosettes, and other ornamental patterns; and in the flamboyant rays and spires of the pediments even up to the highest remaining terraces the tips were composed of pointed glazed white tiles, which must once have given an extraordinary lustre and sparkling effect to the elevation, a good deal of which is perceptible even in the present decay.

The ground-plan is a single corridor, the vaults and walls of which have been originally covered with tasteful diaper painting in bright colours. This remains visible on the soffit of the arching, but the walls have been white-washed over, and repainted in an inferior style with life-size saints and Buddhas, and with a smaller series of the *Jats* or pre-existences of Gautama.

The plan of the upper story is rather more complicated than usual. There is a principal image chamber, with a well-lighted corridor running all round it, but this inner chamber has not been placed, as in the Thapinyu, centrically under the spire.

An enclosure wall surrounds the temple, equally remarkable with that of Dhamayangyí for the beautiful finish of the brickwork. To the north of this there is a second court, surrounded on three sides by a curious range of vaulted and now dilapidated cells. We could not ascertain the object of these, whether for the residence of the religious order, or for the accommodation of worshippers

from a distance, or merely for the deposit of images of Gautama. No traces at least of the latter remained. At one side there was a small house-like building, apparently once two-storied, which may have been the residence of the Poongyee, or Prior, if this was indeed a conventual establishment, as it most probably was. There was also a small tank surrounded by brick steps. The whole of this court appeared to be of later date than the temple enclosure, and of inferior workmanship.

The *Shwé Kú* or 'Golden Cave,' which an inscription, of which Mr. Crawfurd has given a translation by Dr. Judson, assigns to about the year 1552, is a very elegant and elaborately white building of no great size, and stands on an elevated terrace, within the city walls and near the Thapinyu. It is of the same general plan and church-like appearance as the Gaudapalen, but with much concentrated ornament. The projecting vestibule faces the north, which is unusual. In nearly all the other temples, which are not absolutely symmetrical on the four sides, the principal entrance is to the east. The interior is unusually light and spacious in proportion to the area of the building. It is a square vaulted chamber, in the centre of which rises a square mass of masonry supporting the spire, and on the four sides of which are so many Gautamas. It contains several inscriptions; two of them, in very clear and elegant square Burmese characters, being built into the wall, and, as noticed by Crawfurd, covered with a very hard black varnish so as pefectly to resemble black marble, though a knife forcibly applied to the edge will shew the sandstone beneath.

There are several other minor temples of interest near Thapinyu. A little to the south, and outside the ramparts, stands a group of temples called Sem-byo-kú, to the beautiful details of which I have several times referred. The most conspicuous of the ruins to the westward of Thapinyu is marked by a very curious dome and spire of the Ceylon Dagoba form, but both dome and spire being polygons of twelve sides. This building, from several peculiarities of aspect, is suggestive of great antiquity. The internal vault, which is of considerable height, springs from the ground on every side. In one part of the entrance which, in its length the thick mass of brickwork, exhibits various heights and construc-

tions, a painted timber lintel has been used, now in utter decay. Another part of the entrance vault is a *triangular* arch (see Pl. V. Fig. 5,) about 9 or 10 feet in span, the outer arch which defines the doorway being of the usual pointed form. This temple is called *Putho-Budoh-nya*.

Between this and Thapinyu, an almost shapeless ruin, instead of an arched doorway, has a massive stone lintel, now broken. This is noticed by Crawfurd as containing Hindu sculptures. The sculptures remain; two inside and several framed in pannels on the exterior. The figures have nearly all four arms, and have a very Hindu character; one of them also in its action strongly resembles the usual Hindu images of the Monkey-god Hanumán, but the head is defaced. Major Phayre visited this temple in company with the Woondouk, and has furnished a very interesting note on the subject, which is given below.*

* Considering the very proximate derivation of the Buddhism of Burma from the Buddhism of Ceylon, may not the following passage throw some light on the subject. "The Malabar kings who at an early period had acquired the sovereignty of Ceylon, on the failure of the native dynasty introduced the worship of Vishnu and Shiva into the same temples with that of Buddha. The innovation has been perpetuated, and to the present day the statues of these conflicting divinities are to be found within the same buildings; the Diwalas of Hindooism are erected within the same enclosures as the Wihares of the Buddhists; and the Kappoorales of the one religion officiate at the altars almost beneath the same roof with the priests and neophytes of the other." *(Sir J. Emerson Tennent's Christianity in Ceylon*, p. 222.) The same singular fact is mentioned by Mr. Hardy. *(Eastern Monachism*, p. 201.)

This is a small ruined pagoda, standing close to the Thap-pyi-nyo temple, of the usual form of Buddhist hollow Pagodas. It has a stone-frame to the doorway, which is unusual. This has been broken, from the imperfect construction of the arched brickwork above. On either side of the doorway are four niches in the outer wall of the building. These are all vacant but one, in which is an erect stone-figure about eighteen inches high. It holds a lotus bud in each hand and has a pointed crown or cap on its head. There are other niches, on the side and back walls of the building, containing similar stone figures. These appear to be Indian in character, and one with a monkey-face no doubt represents Hanumân.

Entering the temple, the throne, on which an image had evidently once been placed, occupies as usual the centre of the building. It is now vacant. There

Some distance south of Sembyo-Kú is *Thein-ma-tiet*, of a size considerably larger than the common run of the Pagán temples,

are also two empty places for upright images right and left of the throne; and above these are deep niches for smaller images, one of which is still occupied.

An image of either kind, standing and sitting, has been displaced from the original position, and these now lie on the ground in the temple. They are of stone. One of the standing figures has disappeared altogether.

That which has come from the smaller niche above is a seated figure with the legs crossed, somewhat in the Buddha attitude. The figure has four arms, long pendent ears, and a high cap or crown upon the head. The two left arms hold a conch shell, and a mallet (?); the upper right hand has a *tsek** or discus; the other hand is broken. The figure is supported by a *ga-loon** or bird with a man's head. This is evidently an image of Vishnu.

The standing figure is about four feet high, and was pronounced by the Woondouk who accompanied me, to represent the same person as the sitting figure. This, however, is an error. It also has four arms; in the two right hands are placed a sword and a trident, (supposed by the Burmese to be a lotus bud.) In the left hands are a club and a mallet. The image is much disfigured, but its Indian anklets are visible, and beneath the feet is an animal half broken away, but which probably represents a bull. The image no doubt is that of Siva.

The figure up in the niche was too much concealed by the gloom to be minutely observed. It was apparently riding on a bird.

The Woondouk considered the standing and the seated figures above described as being images of Pá-rá-mee-thwá,† a Nát worshipped by Brahmans, and that they, as well as some standing figures of plaster around the central throne, had been introduced as subordinate guardian Náts, in honour of Buddha's image, which once occupied the central place. This image was no doubt of plaster and has decayed by time.

This view of the fact of Hindu deities being introduced into a Buddhist temple is quite consistent with the practice of the present day in Burma. At the Shwé tsee-goon Pagoda in Pagán, which attracts more worshippers than any other, there are in the enclosure figures of Náts to which the people make offerings, in the very presence of Buddha's images, though such is contrary to the tenets of strict Buddhism.‡

That these stone figures were, as supposed by Crawfurd, the principal objects of worship in the small temple where they are found, I see no reason for con-

* The *chakr* and *Garur* (Sanse.) are both appendages of Vishnu. (*Y*).
† This term seems a corruption of *Purmeshwar*, applied I believe, to Siva.
‡ See page 226. (*Y*),

though still to be classed as small among giants such as Thapinyu and Gaudapalen. It is very much on the model of the latter, and is surrounded by a brick enclosure-wall containing remains of other buildings. It is full of paintings of large figures. On the wall, against which the Gautama was placed, were some sixteen personages depicted, which looked excessively like stiff old figures of the apostles on painted glass. In this, or another temple near it, the whole corridor was diapered with minute paintings of Gautama about an inch and a half square.

Not far from this, the outside brickwork having partly fallen from a small solid conical pagoda, it became manifest that it was a real brick-and-mortar *palimpsest*. It had been actually built over another, and that other of highly finished construction, adorned with beautiful moulded tiles, &c.* This building formed a

sidering probable. I rather think with the Woondouk they were simply guardian Náts around the Buddha, to whose memory the temple has been erected. The Woondouk added, however, that these images may have been put into the temple to attract Brahminical worshippers, which, as from indications elsewhere, Indian workmen have apparently been employed on the Pagán temples and sculptures, is not improbable.

* This incrustation of a sacred building appears to be a common Buddhist practice. The great Shwe Madau at Pegu is thus said to have been originally built by two merchants, shortly after the age of Buddha, and to have been only one cubit high, raised by the same individuals to 12. *(Symes's Embassy*, p. 192.)

Speaking of a great Pagoda at Bintenne near Kandy, Mr. Fergusson writes: "The Mahawanso or great Buddhist history of Ceylon, describes the mode by which this building was raised by successive additions, in a manner so illustrative of the principle on which these relic shrines arrived at completion, that it is well worth quoting.

"The Thero Sarabhu, at the demise of the supreme Buddha receiving at his funeral pile the thorax bone relic, brought and deposited it in that identical dagoba [in which a lock of Buddha's hair had been previously placed.] This inspired personage causing a dagoba to be erected twelve cubits high, and enshrining it, thereon departed. The younger brother of King Devenampiatisso (B. C. 250,) discovering this marvellous dagoba constructed another encasing it, thirty cubits in height. King Duttagamini (B. C. 161) while residing there, during his subjugation of the Malabars, constructed a dagoba encasing that one eighty cubits in height. Thus was the Mohayangana dagoba completed. It is possible that at each successive addition some new deposit was made: at least

sort of pair with another pagoda of similar appearance, in front of a small temple of the church character, and the possible object of the incrustation was to make it symmetrize in size with its neighbour.

In passing eastward from the pagoda just mentioned we arrived at the *Shwé San-dau*, a large and lofty pagoda of the Rangoon and Prome type, on a high pyramidal base, and apparently once gilt. Near it, our attention was attracted by a long gabled house, lighted by a few small windows with flat arches in brick of a peculiar construction. Looking in, at a small arched doorway, we found the house to contain a Brobdignagian figure of Gautama recumbent on his side. It was built apparently of brick plastered. But a finger of the hand from which the plaster had been knocked off, was seen to be of sandstone gilt, as if some part at least of the colossus had belonged to a former image of more splendid material.* The eyes were open, and the face, which was the best part of the figure, wore the usual placid smile. The vault of the long chamber in which it lay was painted, rudely enough, with over-shadowing palm-trees. The dimensions of the recumbent giant were as follows:

Top of head to fork, ...	35	feet	5	inches.
Fork to feet, ...	33	„	6	„
Nose, ...	3	„	3	„
Width of chin, ...	2	„	2	„
Length of ear, ...	6	„	10	„

most of the Topes examined in Afghanistan and the Punjab show signs of these successive increments, and successive deposits, one above the other." (*Hand-book of Architecture*, 1. 9.)

The same peculiarity is found in some of the Nubian pyramids, and in the Etrurian tombs. (Id. p. 291.)

* These gigantic figures are probably direct imitations of what ancient Burman pilgrims had seen in Ceylon. At Dambool in that island, says Forbes (I. 370,) a "chamber contains a gigantic and well executed figure of Buddha recumbent, and the statue, as well as the couch and pillow on which he reclines, is cut from the solid rock. This figure is 47 feet in length. The chamber is long, narrow and dark; Gautama Buddha's position and placid aspect, the stillness of the place, all tend to impress the visitor with the feeling that he is in the chamber of death."

Breadth of shoulders, ...	14	„	3	„
Length of arm, ...	32	„	6	„
Feet (Length,)	10	„	0	„
Toes (ditto,)	2	„	2	„
Hand, ...	7	„	4	„
Face, ...	9	„	0	„

On our mentioning this huge image after our return to the steamers, a party started to visit it. They missed their way but lighted on another, of similar character but much greater size! This last, I think, was stated 90 feet long.

On the east side of the Shwé San-dau was a small *cromlech*, of unmistakable character used as a depository table of offerings. It is the only thing of the kind I have heard of in the Burmese countries, and is perhaps an accidental construction, and no relic of primeval customs. The whole of the ground about the base of Shwe San-dau on that side was paved with large masses of sandstone about six feet long and ten inches thick, and this may both have afforded the material and suggested the erection.

So much of Pagán and its remains we saw, but a vast area of ruins remained unvisited by any of the party, and doubtless much of interest has still to be examined. The time which we spent at Pagán altogether was three days and a half in going up, and nearly two days in coming down, but as nearly one whole day was necessarily devoted to public and private letter-writing, and another whole day was abstracted by an attack of fever, I should have come away with much less material for the illustration of these deeply interesting remains, had it not been for the kind assistance of Mr. Oldham, and Lieut. Heathcote.

I may conclude by introducing, not inappropriately, a note with which Major Phayre has favoured me on the Burmese habit of scribbling on the walls of temples, instances of which abound at Pagán.*

* Had I thought of it sooner I might have written an amusing page or two on the Burmese habit of scribbling upon walls. Brick walls white-washed are so uncommon that when one is met with, the people appear to cover every corner of it with figures drawn with charcoal, and written sentences. Their habit in this respect is as inveterate as that of the English. Some of these writings are the mere names of visitors to the temples, others are facetious, a few of the grave

Notes on the Indian species of Lycium.—By T. ANDERSON, *Esq. M. D. Oude Contingent.*

In October, 1855, when passing through the Doab between the Ravee and Beas, I gathered a specimen of Lycium Edgeworthii of Dunal, a species founded on a plant sent to Dunal by Mr. Edgeworth, from near Sirhind. The plant in my Herbarium is evidently the same as that which Dunal has described, but after most careful and repeated examination of a considerable number of specimens in my possession, I am convinced that Dunal's L. Edgeworthii is only a variety of his L. Mediterraneum, the L. Europaeum of Linnæus. In order that his species L. Mediterraneum and L. Edgeworthii may be distinguished, he has refined their specific characters so much, that they appear to be the descriptions rather of trivial varieties than of permanent and well-marked species. The differences between the specific characters of the species consist of a line or two in the length of the calyx, a mark of no importance, of minute differences in the length of the pedicels and peduncles and of inconstant characters taken from the existence of minute hairs at the insertion of the filaments in Lycium Edgeworthii. In my specimens I found several flowers entirely glabrous. In Lycium Europaeum the character is "filamentis basi puberulis." Characters are also taken from the branches and spines, but the latter, in both species, are of all shapes and sizes from a simple thorn ¼ of an inch long to a spine 3 inches long, bearing leaves and flowers. Dunal

order. The following are specimens copied from the Baudhi Pagoda at Pagán. "On the 1st day of the waning moon Dengyot 1216, A. D. 1854 Nga Phyoo, Naga Kyen, and Ko Byeen, three persons, who live beneath the golden feet, worshipped the images and Pagodas at Pagán."

Here is another;

"Palm juice and spirits do not drink; fowls and pigs do not kill; avoid these (sins) that you may hereafter meet the Lord A-ri-ma-tee-ya."* And again;

"Moung Kha and his wife have worshipped and presented offerings at all the Pagodas—applaud! applaud!"

* Arimateeya, or Maitri, is the coming Buddha, who will be the fifth and last of the present world-system. "No oath is considered by a Burmese with more awe and solemnity, than to make him declare that in the event of his failing in truth, may he never see the Boodh Arimadeya." As. Res. XX. 178. (*J*).

supposes the colour of the corolla of L. Edgeworthii to be yellow: in my specimens it is pale rose-coloured as in L. Europaeum.

Dunal has purposed to change the name of the Linnæan L. Europaeum to L. Mediterraneum, a change by no means applicable to a plant widely diffused in India. I therefore retain the Linnæan name and propose the following specific character, which seems applicable to both the Indian and Western plants.

L. Europaeum, fruticosum, cortice albido, ramis spinescentibus, spinis teretibus, foliis 2—5 ad basin spinarum fasciculatis, obovato-oblongis vel oblongo-cuneatis, pedicellis calyce longioribus, interdum geminis, plerumque unifloris, calyce breviter 5—dentato glabro vel puberulo, corolla calyce duplo longiore anguste infundibuliformi, staminibus inclusis. ——— *L. Europaeum*, Linn, et auct.; Royle ill. *L. Mediterraneum* Dun. in DC. Prod. xiii. 523 (cum omnibus variet.) *L. Edgeworthii* Dun. in DC. Prod. xiii. 525. *L. indicum* Wight Icones t. 1403.

Hab. in India prope Delhi *Royle*, Guzerat *Wight*, Sirhind *Edgeworth*, Panjab ad Umritsir, *T. Anderson*.

Folia glabra vel punctulata ½—1 unciam longa. Spinae axillares nudae vel foliosae ¼—1 unciam longae. Flores gemini vel saepius solitarii e fasciculis foliorum. Calyx 5—dentatus cyathiformis 1—2 lineas longus, glaber. Corolla calyce longior infundibuliformis 4—6 lineas longa, roseo-alba. Filamenta filiformia inclusa inæqualia, uno cæteris breviore. Antherae parvae ovatae, basi bifidae. Stylus cylindricus, staminibus longior. Stigma orbiculare, capitatum. Pollen in aqua globosum. Ovarium ovatum. Bacca globosa parva.

In India, special care is required to guard against the undue increase of species, since in this country, besides difficulties arising from want of books of reference, natural causes make the determination of species more difficult than in Europe. One of the most powerful of these is the sudden and complete change of climate in many parts of the Peninsula of India, arising from the periodical recurrence of the rainy season, which often alters the Flora from that of an arid plain to one consisting entirely of a large number of tropical annuals. This climatic change also temporarily affects the appearance or "habit" of the perennial plants, causing a wonderful luxuriance of growth and alteration of the foliage.

To these changes Lycium Europaeum is fully exposed. It is a native of dry sandy plains, where before the rains it is stunted in all its parts, but when the air and soil become charged with moisture an expansion of all its parts takes place, fully accounting for the multiform characters of its leaves and the diversity in the length of the spines, etc.

Report on the Progress of the Magnetic Survey and of the Researches connected with it, from November, 1855, to April, 1856. *By* Robert Schlagintweit, *Esq.*

General Outline of the Route.

My brother Adolphe and I left Agra on the 29th of November, 1855, and went through Dholpore and Chanda to Gwalior. We proceeded thence through a part of Bundelkund, by Dutteeah, Jhansi, Tehri, and Dhamoonee to Saugor, which we reached on the 4th of December.

From Saugor we took different routes. Adolphe proceeded by Dhumow to Nagpore and Madras. I left Saugor on the 19th of December, and proceeded by Maharajpore and Bermhan to Nursingpore, on the left side of the Nerbudda valley; from thence I proceeded by Jhansi Ghaut and Meergunge to Jubbulpore, where I arrived on the 30th December.

The route which I followed from Saugor to Jubbulpore afforded me the gratifying opportunity of examining the large deposits of fossil remains of elephants, rhinoceros, hippopotami, &c., which are exposed on the sides of the Nerbudda valley, and I have been able to obtain a tolerably good collection of specimens.

During a stay of six days at Jubbulpore, I was engaged with a series of barometrical and meteorological observations, and with some experiments on the composition of the atmosphere, which were afterwards repeated on the Umerkuntuk Hills.

I started from Jubbulpore on the 6th of January, and went by Mundlah, Ramgurh, Goruckpore and Karenchia up to Umerkuntuk which forms a very important part of the water-shed of Central India. Near it are the sources of the Soane and Tohilla, of the Nerbudda, and of the Yrap, an affluent of the Mahanuddy.

I arrived at Umerkuntuk on the 20th of January, 1856, and having set up my meteorological instruments, which were regularly registered during my stay, I made excursions to the sources of the Tohila and Soane, and up to the summit of Rajmeergurh Hill, which is one of the highest points of the Mekul range, East of Umerkuntuk.

The plateau of Umerkuntuk afforded me a favourable opportunity of making physical and meteorological experiments, and though the absolute elevation is not very considerable (3,290 to 3,330 English feet,) the data obtained for the decrease of the temperature of the air, and of the ground, &c., may not prove without some interest for the physical geography of Central India, when compared with similar data obtained in the Himalayas, the Neilgherries, and Khasia Hills, &c.

I left Umerkuntuk on the 26th January, and proceeded *vid* Paindra, Moonda, and Amukpore to Sohagpore; thence in a Northerly direction, through Kanrodi and Ramnuggur, crossing the Soane River twice, to Rewah, where I arrived on the 11th of February.

By Mungown and Sohagi, I went to Allahabad, and thence along the Grand Trunk Road to Agra, where I arrived on the 21st of February.

At Agra the whole of the collections sent down last year from the Himalayas, and those made during this cold season, were carefully re-packed for the purpose of being sent to England.

I left Agra on the 8th of March, and travelled *vid* Delhi to Saharunpore, and thence to Nahun, where I was engaged, for several days, examining the geological structure of the Sewalik range. I obtained many interesting tertiary fossils from various localities in the Sewaliks.

I marched through Dugshaie to Simla, where I arrived on the 25th of March.

The observations made in the outer ranges of the Himalayas, and in various localities in the environs of Simla, will be reserved for the next Report, treating of the Himalayas.

Meteorology.

Besides the daily registry of dry and wet bulb thermometers and barometers, whilst on the march, a longer series of observations was made at Saugor, Bermhan, Jubbulpore and Umerkuntuk; at Sohagpore, Allahabad, Agra and Simla. These observations seem to lead to the following conclusions.

The minimum temperature of the air was very regularly observed to set in just before sun-rise, but there was never to be observed a second depression of temperature immediately after sun-rise, as we had observed in the Indian Seas in October, 1854.

The increase of temperature from sun-rise up to 11 o'clock A. M. is specially rapid between the hours of 8 and 9 A. M. I often noticed an increase of temperature of 4 to 5 degrees centigrade between these two hours.

The total increase from sun-rise to 11 o'clock was, at Saugor, (15th to 19th December,) as much as 28 degrees centigrade; at Jubbulpore it was from 12 to 15 degrees; but at Umerkuntuk (20th to 26th January) the difference between sun-rise and 11 o'clock A. M. was only 8½ to 9 degrees centigrade. Between 11 A. M. and 4 P. M., the variation of temperature was generally not very great—not more than 3 or 4 degrees centigrade; but the decrease of temperature between 4 P. M. and 7 P. M. was very rapid.

East of Jubbulpore, at Ramgurh, and as far as Umerkuntuk, the minimum temperature of the day was very near the freezing point; but I never observed a temperature lower than 32 degrees Fahrenheit, or 0 degrees centigrade.

There was quite regularly a hoar-frost setting in, even if the minimum temperature of the air was 2 or 3 degrees above the freezing point. The hoar-frost was produced by the great radiation of the leaves and grass during the serene nights.

At Umerkuntuk itself I observed some remarkable irregularities of temperature. Considering the cold temperatures experienced in the stations of the Nerbudda valley, Westward of Umerkuntuk, it might be expected to find the minimum temperature of the night at Umerkuntuk below zero; but on the contrary the minimum temperature of the air on the plateau, at the end of January, was constantly 9 degrees and even 12 degrees centigrade above the freezing point.

It was therefore considerably warmer than the minimum of the valleys at the foot of the plateau. Besides the minimum does not take place just before sun-rise, but one or one-and-a-half hour earlier. The reason of this phenomenon is that during the night, the cold air, which is heavier, flows down along the sides of the hills, and accumulates at the bottom of the valleys, whilst at the top of the small plateau itself, the cold air, which is locally formed by the radiation of leaves and grass, is immediately carried away by the winds into the surrounding atmosphere and re-placed by somewhat warmer air.

During the day-time the temperature at the top of Umerkuntuk is of course much lower than in the valleys below. During my stay there the highest observed temperature was 75 degrees Fahrenheit, exceeding by 5 degrees Fahrenheit the maximum temperature of all the other days.

There was only one day quite free of clouds during my stay at Umerkuntuk. Generally, soon after 8 o'clock A. M. quantities of cirri dispersed all over the sky, and mitigated the full power of the sun's rays: they only dissolved themselves partially in the evening before sun-set, some portions remaining even during the night.

Some rain fell on the 29th and 30th of January. It appeared to have extended over a large area, and greatly affected the temperature of the air, cooling it down so that the maximum temperature was lowered more than 5 degrees.

From Jubbulpore up to Umerkuntuk, a strong South-West or South wind set in very regularly between 9 and 10 A. M., and continued till 5 or 5-30 P. M. The nights were constantly calm. At Umerkuntuk the wind blew from the same direction, but it was quite calm during the rain falls. There was not the least wind on the journey from Paindra to Rewah, where again a South-West wind began.

Comparing my meteorological observations with those made during the cold season of 1854-55 by my brothers and myself, in the Southern parts of India, the Deccan, Mysore, &c., I find that in Southern India there is, at equal elevations, never so cold a temperature as I observed this season in Central India, in the valley of the Nerbudda, &c.

In connexion with this fact it deserves mention, that in summer the reverse takes place, and that the maximum heat of Central India, at equal elevations, generally exceeds somewhat that of Southern India.

Together with the observations of the dry and wet bulb thermometers, the readings of the barometer were registered, and I have been able to determine the heights of all important places on the route followed. Some stations were determined both by the barometer and the boiling point thermometer, which from its minute and accurate divisions (each degree of Celsius is divided into 100 parts) and having been carefully compared at different heights with barometers, may be considered as giving equally accurate results with the barometer itself. On the journey from Sohagpore to Rewah, I used only this instrument, as the barometer was leaking very much, and some air had introduced itself into it.

The minimum of barometric pressure at about 4 P. M. occurred on the small plateau of Umerkuntuk, very nearly at the same time as in the lower valleys and plains of Hindustan, and the daily variation of the barometer seems to be very nearly the same at Umerkuntuk as it is in the plains.

The temperature of the earth at different depths was determined by the long thermometer (one metre in length.) For greater depths I used a thermometer, the bulb of which was made extremely insensible. The observations of the temperature of the ground at Umerkuntuk, compared with similar data around the base of the hill, afford some curious examples of the cooling influences which extensive jungles have, upon the temperature of the ground. At Umerkuntuk the temperature was, 22nd to 25th January—

At one metre below the surface,.....21° 2′ Centigrade.
„ two metres, „ .....21° 5′ „

At Paindra, more than 1,000 feet lower than Umerkuntuk, the temperature was, 27th to 29th of January—

At one metre below the surface,.....20° 0′ Centigrade.
„ two metres, „ .....21° 0′ „

I observed similar differences at Ramgurh, and at some other stations West and North of Umerkuntuk, which are all 1,000 to 1,300 feet lower than the plateau.

This anomalous phenomenon seems to be due to the following causes.

The plateau of Umerkuntuk itself has comparatively little jungle, and the ground is exposed freely to the action of the sun. Round the base of Umerkuntuk, and especially on the slopes of the hills, very thick and extensive jungles prevail, which keep the ground moist and cool, as they prevent the heating of the surface by the powerful tropical sun.

The meteorological observations which I had occasion to make in many parts of the jungles of Central India, as well as those of my brother Hermann in Assam, and of my brother Adolphe in the Godavery jungles, offer many striking examples of the cooling influence which extensive jungles exercise in India on the temperature of the ground, as well as on the atmosphere.

The anomalous cooling of the ground by jungles is still more apparent than the difference of temperature in the air of jungles when compared with open districts, since the differences in the temperature of the air are much more equalized by winds and atmospheric currents.

At Agra I was enabled, through the kind assistance of Colonel J. T. Boileau, the Chief Engineer, to ascertain the temperature of the earth nearly 50 feet below the surface. The insensible thermometer was sunk in a small shaft dug for the purpose, and remained buried there for a fortnight before it was taken up. The temperature was, from the 22nd of February to the 4th of March, 28° 3′ centigrade, equal to 82° 9′ Fahrenheit. The temperature thus observed accords, within one degree, with the temperature of the earth at about 60 feet below the surface, ascertained at Benares in April 1855. The temperature at one metre below the surface at Agra was only 25 degrees centigrade, as the upper strata had been cooled by the influence of the past cold season.

The temperature of the wells at Agra was always a little lower than that of the ground, thus directly ascertained. As an average of several wells from which a large quantity of water was constantly drawn for domestic purposes and irrigation, I obtained 27° 6′ to 27° 8′ centigrade.

The temperature of water in wells, which are but little used, is considerably cooler than that of wells from which water is constantly drawn, as the cold air which sinks down during the night into the wells cools stagnant water much more than it can do the water of wells which is constantly removed.

As a curious phenomenon connected with Physical Geography, I finally beg to mention the way in which the jungles are distributed in Central India.

The base and slope of the hills, and the valleys between them, are generally covered with very dense and extensive jungles, but the summit of the flat hills and small plateaux which occur in many localities, are nearly always quite bare and destitute of trees and jungly vegetation. I had been informed by my brothers, that this very curious phenomenon occurs all along the Southern parts of the Khasia and Jynteah Hills, and on the plateau of the Neilgherries.

This phenomenon seems to be due, in part, to the very strong winds which sweep over those isolated plateaux and which evidently must be very injurious to jungle vegetation. Another important cause is, the want of moisture in these isolated plateaux.

The geological results obtained in the journey from Agra to Saugor will be contained in the Report which my brother Adolphe will have the honour to submit to Government; I shall therefore content myself by mentioning some geological results to which the investigation of the country visited by me alone seems to lead.

In the valley of the Nerbudda some interesting deposits of fossil remains occur. The larger deposits are found from Bermhan up to Mundlah, the bones are found in a brown alluvial clay, and belong to species of elephants, rhinoceros, hippopotami, buffaloes, &c. I also found with the bones well preserved fossil shells of Unio, Melania, and other fresh-water species. A comparison of these fossil shells with those now living in the Nerbudda, and in various tanks of Central India, of which I collected a large number, will assist in determining the geological age of the fossiliferous deposits of the Nerbudda valley.

From Jubbulpore to Umerkuntuk the prevailing rock is black trap, identical with the trap of the Deccan.

I found in several localities the thin lacustrine deposit, which reposes on trap, and is again overlaied by other layers of trap. In some places it was full of fossil fresh-water shells of Physa, Unio, Melania, &c.

The principal fossiliferous localities which I visited were Phool Saugor, about 9 miles west of Mundlah, Bellasur, and Bonder.

The plateau of Umerkuntuk is one of the culminating points of Central India and this place, and the hills in its neighbourhood, form the important water-shed of Central India, between the Rivers Nerbudda, Soane, Tohilla, and Mahanuddy. The plateau of Umerkuntuk is not very large—it is nearly circular, and surrounded by hills, which are only 50 to 60 English feet higher. The slopes are very steep to the East and South, whilst they are much more gentle to the West and North. The hills run from Umerkuntuk first in a Northerly direction, and then turn to the North-West. They are generally known by the inhabitants under the name of Mokul. The highest point of this range is probably Rajmeergurh, near Umerkuntuk, which it exceeds by about 500 English feet—the latter place itself is about 3,290 to 3,330 English feet.

The Nerbudda alone rises on the plateau of Umerkuntuk. It has its origin in a tank or pool, surrounded in the most irregular way, with solid masonry and fine temples:—one of the oldest of them seems to me to be a Jain (Buddhist) temple. The tank is fed by subterranean springs, and the origin of the Nerbudda is thus precisely similar to that of the Kistna, on the plateau of Mahabaleshwur in the Deccan.

I determined the quantity of water at the spot where the Nerbudda flows out of the tank, and found it to be, on the 23rd of January, only two French litres per second. But very soon this little rivulet is met by the waters of two other springs, and only a few miles from its source it is joined by the waters of two more springs, and forms a beautiful cataract of about 70 English feet.

The Soane has not its rise at Umerkuntuk, but to the East of the hill, and about 1,200 feet lower than the Nerbudda in an open partially cultivated spot, from a tank called Sone Budder, 8 miles

East of Paindra, and forms a swampy marshy place over a considerable extent.

The Tohilla rises about 5 miles North of the Nerbudda, at a place called Tohaletsur, nearly on a level with the Nerbudda.

The Yrap, a small river, which flows to the South, and joins the Mahanuddy, has its origin near Paindra, from several large tanks, forming at first a swampy ground. Its source is situated about 5 or 6 miles from that of the Soane, and its water-shed is not formed by a distinct ridge, but only by a slight rising of the ground.

On the journey from Sohagpore through Rewah to Allahabad, I took the opportunity of carrying a barometric and geological section over the plateau of Bundelkund.

The plateau, or rather the succession of plateaux, consists of a reddish and white sandstone, in large banks, which are generally horizontal—it reposes upon limestone and shales of blue and grey colours, which very often are a little more inclined than the sandstone, and the shales are quite identical with similar rocks which I observed in the Gwalior Territory. The plateau of Bundelkund terminates abruptly about 40 miles South of Allahabad, where the sandy deposits of the plain of Hindustan begin.

Simlah, 27th May, 1856.

Mean temperature and fall of rain in Darjiling, Sikhim Himalayah, 1848 to 1855.—By J. R. WITHECOMBE, *M. D. Civil Surgeon.*

Months.	Julla Pahar 7500 feet above the sea.			Civil Station Hospital 6902 feet above the sea.					Observatory 7168 feet above the sea.
	Mean Temperature.								
	1848-49.	1849-50.	Average.	1850-51.	1851-52.	1852-53.	1853-54.	Average.	1854-55.
May, ...	58.53	60.49	59.51	59.14	61.60	59.40	61.35	60.37	59.90
June, ...	61.42	62.12	61.77	63.59	62.57	62.15	64.34	63.16	61.66
July, ...	63.23	62.87	63.05	63.69	63.80	63.07	65.26	63.96	62.70
August, ...	63.28	61.81	62.54	63.26	64.41	63.80	64.13	63.90	62.59
September, ...	60.13	62.78	61.45	62.32	63.23	62.09	62.02	62.42	60.89
October, ...	55.81	55.93	55.87	61.85	58.89	56.40	56.71	58.46	57.86
November, ...	48.49	48.38	48.43	54.48	50.41	48.05	49.28	50.56	51.09
December, ...	43.08	41.96	42.52	55.89	44.86	42.75	45.29	44.70	47.30
January, ...	40.01	42.24	41.14	40.96	42.25	36.79	45.85	41.46	39.42
February, ...	40.77	41.93	41.33	41.79	47.17	47.23	42.01	45.55	41.93
March,.....	50.13	48.38	49.26	51.91	47.23	52.83	51.47	50.86	49.36
April, ...	59.53	56.77	58.65	55.71	54.43	57.74	53.83	55.43	52.58
Average, ...	53.79	53.80	53.79	55.38	55.57	54.36	55.13	54.99	53.94

RAIN IN INCHES.

	1850-51.	1851-52.	1852-53.	1853-54.	1854-55.	Average for 5 years.
May, ...	2.74	6.75	9.15	2.07	5.68	5.28
June, ...	30.55	31.00	17.30	26.90	40.57	29.26
July, ...	32.02	27.15	35.40	29.49	18.55	28.52
August, ...	40.02	16.70	15.35	31.26	40.91	28.85
September, ...	20.00	19.60	15.15	20.15	28.10	20.60
October, ...	.00	9.35	.45	4.34	4.15	3.64
November, ...	.00	1.30	.05	.37	2.10	.80
December, ...	.00	.05	.80	.00	.20	.21
January, ...	2.05	3.45	.00	1.85	.10	1.49
February, ...	2.75	2.40	.75	.75	1.57	1.64
March, ...	4.40	4.00	17.40	.00	.40	5.24
April, ...	.55	4.55	2.70	1.00	5.10	2.78
Total fall of rain,...	135.08	126.50	114.50	118.18	147.43	

PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL,

FOR JANUARY, 1857.

At the annual general meeting of the Society, held on the 7th January, 1857,

Hon'ble Sir James Colvile, Kt. President, in the Chair.

The Secretary read the following

REPORT.

The Council of the Asiatic Society have the satisfaction of submitting their annual report exhibiting the Society's transactions, and the state of its affairs during the past year.

The number of ordinary members resident in India at the close of every year since 1851 has remained nearly stationary, ranging between 122 in 1852, and 131 in the present year. During the last twelve months there has been an accession of 19 new members. The loss has been altogether 14, of which 7 have been removed by death, 6 by retirement, and one (Dwarika Nath Basu) under bye law 13 of the Society's rules.

	Ordinary.	Paying.	Absent.
1851..	130	124	6
1852..	139	122	17
1853..	146	123	23
1854..	155	129	26
1855..	162	128	34
1856..	167	131	36

It will thus be seen that during the past year, there has been an addition of only 5 to the number of members. The entire list contains 167 names, inclusive of those absent in Europe.

The obituary includes the names of Major General Sir W. H. Sleeman, K.C.B., Dr. Montgomerie, Lieut. Chancey, Rájá Sattyacharan Ghosal, Raja Sriesh Chandra Ráya, and Messrs. Houstoun and R. W. G. Frith.

Dr. Montgomerie was a zealous and disinterested promoter of the objects of the Society, and as the discoverer of Gutta Percha had received the gold medal of the Society of Arts of London.

Mr. Frith was distinguished for his devotion to the science of Entomology.

By the death of the Rev. Dr. Buckland, the Society has lost one of its most distinguished honorary members.

The names of Professor Langlois and Mons. Marcel have also to be removed from the list, and the Society has to deplore the loss which the cause of Oriental literature must suffer from the demise of these two distinguished savans, the intelligence of whose death only reached India a few months ago.

Seven corresponding members have been elected during the last twelve months, some of whom are Oriental scholars, or are otherwise distinguished for their literary or scientific attainments.

Finance.—The abstract statement No. 1 annexed to the report shews the receipts of 1856 to have been Rs. 18,204-7-1, which added to the balance of the preceding year (Rs. 6,251-13-8) make the total of Rs. 24,456-4-9.

The disbursements amount to Rs. 17,321-6-5, inclusive of the sum of Rs. 2,500 advanced to the Oriental Publication Fund as a temporary loan, and which must be considered a part of the balance. The total liabilities amount to Rs. 3,605-9-4, while the cash balance in hand is Rs. 6,664-14-1, to which is to be added the sum of Rs. 2,500, advanced to the Oriental Fund, making a total of Rs. 9,164-14-1. In addition to this, there are outstanding assets to the extent of Rs. 8,908-3-8.

Of the outstanding sums due to the Society, shown in the report of 1855, Rs. 485-4 have been written off to Profit and Loss as unrealizable subscriptions due from deceased members, and although there are still several items of a similar nature, yet the Council are not without hopes that opportunities may occur for recovering a considerable portion of them.

The marginal estimate of the probable income and expenditure of the next year will be found to fall short of that of previous years, simply because the amount of the Government Grant for the Museum of Economic Geology has ceased to be borne in the accounts, in consequence of the removal of that establishment, and the cessation of the allowance from September last.

Income.		
Contributions, ..	..	8,000 0
Government Grant at 300	..	3,600 0
Sale of Books, ..	..	1,000 0
Journal, ...	..	800 0
Interest, ...	..	120 0
Miscellaneous, ..	..	10 0
		13,530 0
Monthly average ..	..	1,127 8

Expenditure.		
Zoological Museum,	..	4,200 0
Library—Estabt. 936 0 0		
Bookbinding, 300 0 0		
Purchase of books, .. 650 0 0		
Contingencies, 114 0 0		
		2,000 0
Estabt. General, ..		1,800 0
Journal, ..		2,700 0
Miscellaneous, including Building, ..		1,200 0
Deposit, ..		72 0
		11,972 0
Monthly average, ..		997 10 8

The subject of reducing the rate of subscription to the Society from Rs. 16 to 10 per quarter was brought forward for final discussion and decision in September last.

The proposition was orginally moved by Major Thuillier in Nov. 1855. The Council after careful deliberation reported against the expediency of the proposed change, and the question having been referred to the Society at large, and the votes of absent members solicited under bye-law 45, the motion was negatived at a special meeting, held in September last, the number of suffrages obtained in favour of the motion being 25, whilst 23 were given against it.

Library. Considerable improvement has been effected in the preservation and arrangement of the books. Much, however, yet remains to be done in the way of enriching the contents of the Library. Nearly 250 vols. have been added during the year, a considerable portion of which are donations from authors and learned societies. The leading Scientific periodicals of Europe, obtained either by purchase or exchange, are from time to time laid on the table of the new reading-room for perusal.

A new catalogue of the Library has been published, copies of which may be had by members free of charge by application to the Librarian. The price to non-subscribers has ben fixed at 3 Rupees a copy.

The Coin Cabinet of the Society has received an addition of 17 gold coins from the Government of the N. W. Provinces, and a few silver coins of historic importance have been contributed by several gentlemen.

The Government of India having resolved upon establishing a separate Geological Museum in connection with the Geological Survey, has directed the transfer to the proposed institution of its Museum of Economic Geology which has been in charge of the Society since 1841.

By this arrangement the Society has lost the valuable services of Mr. Piddington, who, besides taking charge of the Government Museum of Economic Geology, has hitherto had the care of the Society's own collections of minerals and rocks.

The accession of new specimens in this department has been recorded by the Curators. They include amongst others a superb meteorite from Sougoule presented by Mr. Grote; a valuable collection of fossils from Kohat by Lieut. Trotter; a fine specimen of the scarce mineral Condrodite from Nagpore, by the Rev. S. Hislop; a box of minerals and specimens illustrating the different stages of metallurgical processes, particularly of the manufacture of iron from Col. Tremenhere; and a valuable series of Casts of Sewálik fossils from the Museum of the India House, presented by the Hon'ble Court of Directors.

The Museum continues to be a source of considerable attraction to the public, and that it is duly appreciated is best shewn by the numbers who daily resort to the rooms. Very few persons having hitherto recorded their names in the visitors' book, the Jemadar was directed in the middle of November last to note carefully the name and sex of every visitor who expressed either an inability or a reluctance to write. The average thus obtained appears to have exceeded 240 persons a day, as shewn in the margin.

Nov. 18th to 29th being 12 days open				
Natives,		Europeans,		
Male	Female	Male	Female	Total.
2889	81	65	19	3054
December 26 days open.				
5638	205	288	118	6249
				9303

Journal.—Six Nos. of the Journal have already been issued, and another, which will be the last of the year, is in the press, and nearly ready for publication. Of these No. VII contains a complete

and efficient Index to the last two volumes of the Researches, and the first 23 vols. of the Journal.

It is hoped that this publication will supply a desideratum which has been long felt by all who have occasion to consult the pages of the Society's transactions, and render the varied and valuable matter contained in the volumes accessible, not merely to our own members, but to the public at large.

Officers. Babu Gour Doss Bysâck was appointed in March last Assistant Secretary and Librarian in place of Bábu Rájendralál Mittra resigned, whose valuable services have received the public acknowledgment of the Society, as recorded in the proceedings of February last. His successor has been very regular and assiduous in the discharge of his duties.

Oriental Fund. It has been found that from the rapid issue of the Nos. of the Bibliotheca Indica during the last three years, the demands upon the Oriental Fund have far exceeded its resources. The activity of the several editors had pushed the publication of the series beyond the limits warranted by the Government allowance, and the consequence has been, the accumulation of heavy liabilities which have been the subject of remark both by the local and home Government.

It has therefore been resolved that the publication should be suspended until provision is made for the liquidation of the debts.

The principles on which the Bibliotheca Indica has lately been conducted were likewise made the subject of animadversion by Professor Horace Hayman Wilson, and the Hon'ble Court of Directors. They drew the attention of the Society to the disproportion of the Arabic to the Sanscrit publications, which they considered inconsistent with the comparative claims of the two departments of literature, and dwelt on the importance of confining the appropriation of the grant to the encouragement of the Sanscrit language, except in the case of works illustrative of the history or social condition of India.

The Society without concurring in the wisdom of restricting the Bibliotheca Indica to Sanscrit works, or to works relating exclusively to India, have expressed every disposition to be guided by the views advanced by the learned Professor and the Hon'ble Court.

The Council are glad to add that the liabilities of the Oriental Fund have been considerably reduced within the last year.

During the last twelve months only 8 Nos. of the Bibliotheca Indica have been issued, of which 5 are Sanscrit and 3 Arabic.

The names of the works are :—

1.—The Taittíriya Saṁhitá of the Black Yajur Veda, edited by Dr. E. Röer, Nos. 133, 134 and 137.

2.—The Brihad Aranyaka Upanishad, edited by Dr. Röer, No. 135.

3.—A Biographical Dictionary of Persons who knew Mahommed, edited by Moulavies Mahamed Wayzeh Abdul Huqq and Golam Kadir, and Dr. Sprenger, Nos. 136 and 138.

4.—Waquidy's History of Mahamed's Campaign, edited by A. Von Kremer, No. 139.

5.—The Márkandeya Puráṇa, edited by the Rev. K. M. Banerjea, No. 140.

It will be observed that these numbers are in continuation of works already undertaken. No new work has been commenced nor will be, until the unfinished editions are completed, which will be a work of time in consequence of the extent to which the resources of the Fund have been anticipated.

With the conclusion of the works in hand, the present series of the Bibliotheca Indica will be brought to a close, and it is the opinion of the Council that a new series should not be commenced without a careful revision of the rules under which the publication has been conducted.

The report was adopted.

The meeting then proceeded to ballot for the Council and Officers for the ensuing year. Captain Sherwill and Mr. Gordon Young, were appointed Scrutineers, and at the close of the ballot, the Chairman announced the following result :—

Hon'ble Sir J. W. Colvile, Kt. *President.*

Bábu Ramgopal Ghose,
Dr. G. G. Spilsbury,
A. Grote, Esq. } *Vice-Presidents.*
Dr. H. Walker.
C. Beadon, Esq.

Dr. T. Thomson.
Dr. T. Boycott.
Capt. C. B. Young.
Bábu Ramáprasad Roy.
E. A. Samuells, Esq.
T. Oldham, Esq.
Major Strachey.
W. S. Atkinson, Esq. } *Joint Secretaries.*
Bábu Rájendralál Mittra. }

The question of transferring the Society's Geological collections to the new Government Museum, as proposed in the letter (dated 11th July last) from the Government of India, laid before the Society at the August Meeting, was taken into consideration. The Secretary announced that 8 non-resident members out of 55 had replied to the Circular which was addressed to them, requesting their votes on the subject of the transfer, two voted in favour of, and 6 against the transfer. Such of the letters as contained remarks were then read, and several members having addressed the meeting the question was put to the vote, and negatived by a majority of one.

	For.	Against.
Non residents, ...	2	6
Residents, ...	12	9
	14	15

The meeting then separated.

STATEMENT

Abstract of the Cash Account of the Asiatic

RECEIPTS.

	1855.			1856.		
CONTRIBUTIONS,	7,166	0	0			
Received from Members, ...				8,096	0	0
ADMISSION FEE,	512	0	0			
Received from new Members, ...				448	0	0
JOURNAL,	784	8	0			
Sale Proceeds of, and Subscription to the Journal of the Asiatic Society, ...				768	10	0
LIBRARY,	631	14	0			
Sale Proceeds of Books, ...				1,623	13	9
„ „ of Bookshelves,	0	0	0	38	4	0
						1,662 1 9
MUSEUM OF ZOOLOGY,	3,662	10	6			
Received from the General Treasury at 300 Rs. per month, ...				3,600	0	0
MUSEUM OF ECO. GEOLOGY,	3,768	0	0			
Received from the General Treasury at 314 Rs. per month up to September, 1856, ...				2,826	0	0
SECRETARY'S OFFICE, ..	1	13	3			
Discount on Postage Stamps, ...				2	2	3
Fine, ...				1	0	0
Refund of Postage, ...				2	1	0
						5 3 3
				Carried over,		17,405 15 0

No. 1.

Society for 1856.

DISBURSEMENTS.

	1855.	1856.	
JOURNAL, ...	2,631 14 0		
Freight, ...		72 10 0	
Printing Charges, ...		2,483 12 9	
Engraving, ...		28 0 0	
Colouring, ...		45 0 0	
Lithographing, ...		168 4 0	
Purchase of Journal, ...		10 8 0	
Commission on sale of Books, ...		10 14 5	
Petty Charges, ...		35 2 6	
Correcting and Checking Index for Journal, ...		58 9 0	
			2,912 12 8
LIBRARY, ...	2,335 9 1		
Salary of the Librarian, 12 mths. at 70 pr. mth. ...		840 0 0	
Establishment, ditto, at 8 per month, ...		96 0 0	
Purchase of Books, ...		179 15 3	
Freight, ...		62 4 0	
Book-binding, ...		381 10 0	
Commission on sale of Books, ...		118 6 8	
New Book cases, ...		460 0 0	
Petty Charges, ...		33 1 0	
Stationery, ...		19 7 0	
Postage, ...		4 8 0	
Bill of Lading, ...		0 2 0	
Labelling Shelves, ...		5 10 0	
Copying Charges, ...		1 0 0	
Repairing Plaster Figures, ...		15 0 0	
			2,216 15 11
MUSEUM OF ZOOLOGY. ...	6,003 4 0		
Salary of the Curator E. Blyth, Esq. at 250 pr. m. 12 ms.		3,000 0 0	
House-rent, at 40 per month, 12 do.		480 0 0	
Establishment, at 35 per month, 12 do. ...		420 0 0	
Contingent Charges, ...		196 2 0	
Landing Charges, ...		8 1 6	
Postage, ...		9 9 6	
Stoppered Bottles, ...		20 0 0	
			4,133 13 0
MUSEUM OF ECONOMIC GEOLOGY,	3,711 5 6		
Salary of the Curator H. Piddington, Esq. up to September, at 250 per month, ...		2,250 0 0	
Establishment, ...		315 0 0	
Contingent Charges, ...		214 12 6	
			2,779 12 6
SECRETARY'S OFFICE,	1,963 5 9		
General Establishment		770 13 0	
Secretary's Office Establishment, at 54, ...		648 0 0	
Freight, ...		4 0 0	
Lithographing bills, circular, &c.		21 1 3	
Carried over,	1,443 14 3	12,043 6 1	

					Brought forward, Co.'s Rs.		17,405	15 0
VESTED FUND.			29	3 7				
Interest on Company's Paper from the Government Agent, ...					29	14 9		
Interest on 2,500 Rs. advanced to the O. P. Fund from 16th Jan. to 31st Dec. 1856, at 4 per cent.					95	13 4	125	12 1
GENERAL ESTABLISHMENT.								
			0	8 0				
Fine, ...							2	2 0
DEPOSIT ACCOUNT.								
On Account Spilsbury Testimonial, ...					17	0 0		
F. E. Hall, Esq.					41	0 0		
H. P. Riddell, Esq.					2	0 0		
Major J. C. Hannyngton, ...					32	0 0		
C. Gubbins, Esq.					32	0 0		
W. T. Blanford, Esq.					10	0 0		
R. Spankie, Esq.					16	0 0		
Rev. S. Hislop, ...					16	11 0		
Rájá Apúrva Krishna Deb, ...					50	0 0		
							216	11 0
STACY COIN COLLECTION.								
Received from Major General Hon'ble J. Low his subscription to the Fund, ...					...		50	0 0
WILLIAMS AND NORGATE.								
Received from Raja Apúrva Krishna by transfer from Deposit Account, ...					100	0 0		
„ from Raja Radhacaunt Deb, ...					2	0 0		
„ from Rájendralál Mittra, ...					300	0 0		
							402	0 0
LIEUT. R. STEWART.								
Refund of Postage, ...					...		0	12 0
W. MUIR, ESQ.								
Refund of Postage, ...					...		0	9 0
REV. S. HISLOP.								
Refund of Postage, ...					...		0	10 0
					Carried over,		18,204	7 1

Brought forward, Co.'s Rs.			1,443 14 3	12,043 6 1	
Printing Charges, ...			20 0 7		
Stationery, ...			82 7 0		
Petty Charges, ...			38 4 9		
Postage, ...			120 1 3		
Copying Charges, ...			5 0 0		
Tin boxes for Cash, and Secretary, ...			11 4 0		
				1,720 15 10	
Deposit Account, ...	673 4 0				
Rev. S. Hislop on account, ...			5 0 0		
Babu Dwarka Nath Chatterjee, ...			66 8 0		
F. E. Hall, Esq. on account Contribution and Postage,			32 1 0		
C. Gubbins, Esq.			48 0 0		
Major M. L. Loftie, ...			16 0 0		
Hon'ble Capt. Byng, ...			48 0 0		
Major Hannyngton, ...			64 0 0		
Raja Apúrva Krishna Deb by transfer to Messrs. Williams and Norgate, ...			100 0 0		
R. Spankie, Esq.			16 0 0		
				395 9 0	
Miscellaneous, ...	236 11 3				
Petty Charges on account of Meetings, ...			181 14 0		
Advertising Meetings, ...			31 0 0		
Repairing a Clock, ...			10 0 0		
Varnish to different pictures, ...			10 2 0		
				233 0 0	
Williams and Norgate, ...	11 0 0				
Purchase of Books on their account, ...			17 4 0		
Freight, ...			5 0 0		
				22 4 0	
Building, ...	272 14 0				
Assessment, ...			328 2 0		
Sundry Repairs, ...			16 10 0		
Laying Khoa on the Compound, ...			59 10 6		
				404 6 6	
Oriental Publication Fund.					
Paid a Loan, ...				2,500 0 0	
Lieut. R. Stewart.					
Postage Stamps paid on his account, ...				0 12 0	
W. Muir, Esq.					
Postage Stamps paid on his account, ...				0 9 0	
J. Nicolson, Esq.					
Postage Stamps paid on his account, ...				0 8 0	
			Carried over,	17,321 6 5	

					Brought forward, Co.'s Rs.	18,204	7	1
BALANCE OF 1855.								
Bank of Bengal,	...	...	5,820	13	7			
Cash in hand,	...	...	62	10	7			
					5,883	8	2	
Inefficient Balance,	...	...	...		368	5	6	
								6,251 13 8
								24,456 4 9

The 31*st Dec.*, 1856.

GOUR DOSS BYSÁCK.
Asst. Sec.

			Brought forward, Co.'s Rs.			17,321	6	5
BALANCE.								
Bank of Bengal,	...	...6,574	14	10				
Cash in hand, ...	...	... 89	15	3				
					6,664	14	1	
Inefficient Balance,	...	...	...		470	0	3	7,134 14 4
								24,456 4 9

E. E.

W. S. ATKINSON,
Secretary.

STATEMENT

Abstract of the Oriental

						1855.				1856.	
Balance of 1855 in the Bank of Bengal,				1,064	0	8					
Cash in hand,...	...	...		19	9	10	1,083	10	6		
Inefficient Balance,	...	...	...				929	8	0		
										2,013	2	6
SALE OF ORIENTAL PUBLICATIONS.							1,012	15	3		
Received by Sale of Bib. Indica,	...	...	...							1,323	12	3
GOVERNMENT ALLOWANCE.							6,000	0	0		
Received from General Treasury, at 500 per month,...								...		6,000	0	0
ASIATIC SOCIETY.												
Received a Loan,...	...	...	...				0	0	0	2,500	0	0
VESTED FUND.							361	1	0			
Interest on Company's Paper from Government Agent,								...		209	7	6
									Carried over,	12,046	6	0

No. 2.

Fund for the year 1856.

	1855.			1856.					
Sale of Oriental Publications.	166	10	4						
Freight, ...				13	11	0			
Commission, ...				66	0	9			
							79	11	9
Bibliotheca Indica.	134	13	6						
Freight, ...				56	5	0			
Printing Charges, ...				224	0	0			
							280	5	0
Custody of Oriental Works.	715	12	6						
Salary of Librarian, at 30 per month, 12mo. ...				360	0	0			
Establishment, at 12 per month, do.				144	0	0			
Petty Charges, ...				1	3	0			
Stationery, ...				5	0	0			
Book-binding, ...				150	4	0			
Extra Duftry, ...				34	10	6			
Postage, ...				10	0	0			
							705	1	6
Biographical Dictionary.	753	8	0						
Editing Charges, ...				40	0	0			
Printing Charges, ...				504	0	0			
							544	0	0
Márkandeya Puráná.									
Printing Charges, ...					...		465	0	0
Waqidy.	45	6	0						
Printing Charges, ...				672	0	0			
Petty Charges, ...				3	8	0			
							675	8	0
Vásavadattá.	3	2	0						
Printing Charges, ...					...		228	6	0
Náishadhá.									
Printing Charges, ...					...		1,048	12	0
Bríhadáránya Upanishad.									
Printing Charges, ...					...		166	0	0
Copying of MSS.	67	1	9						
Copying charges, ...					...		78	9	3
Dictionary of Technical Terms.	2,296	8	0						
Editing Charges, ...				42	0	0			
Printing Charges, 500 Copies of Fasc. 8, 9, 10 and 11, at 424 each, ...				1,696	0	0			
							1,738	0	0
				Carried over,			6,003	5	6

				Brought forward, Co.'s Rs.	12,046	6	0
DEPOSIT ACCOUNT.							
Dasan Santgram Sewák Ram,	...	...	100	0	0		
Dwarka Nauth Chatterjee, ...	...	...	0	8	0		
						100	8	0
					12,146	14	0

The 31st Dec., 1856.

GOUR DOSS BYSÁCK,
Asst. Secy.

						Brought forward, Co.'s Rs.	3,00	5	6
UTTARA NAISHAD CHARITRA.									
Printing Charges, ...	...	...	448	0	0		429	2	0
WHITE YAJUR VEDA.									
Subscription for 20 copies, ...	..	...					600	0	0
ITQAN.									
Printing Charges,... ...	...	...		...			672	0	0
SÁNKHYA PRAVACHANA BHÁSHYA.									
Printing Charges, ...	...	...		...			24		0
SURYA SIDDHÁNTÁ.									
Printing Charges, ...	...	...	246	4	0		224	0	0
IS'ÁBÁ.									
Printing Charges, ...	...	...		...			981	0	0
BLACK YAYUR VEDA.									
			228	6					
Printing Charges, ...	...	...		...			680	12	0
DEPOSIT ACCOUNT.									
Dásan Sántgrám Sewakrám, ...		...		...			58	3	0
INTEREST ACCOUNT.									
Paid to the Asiatic Society on the Loan received, ...				...			95	13	4
BALANCE.									
Bank of Bengal, ...		283	13	6					
Cash in hand, ...		1	14	0					
					285	11	6		
Inefficient Balance, ...	...			...	2,092	14	8		
								2,378	10	2
								12,146	14	0

E. E.

W. S. ATKINSON,
Secretary.

STATEMENT No. 3.

Assets.

	1855.			1856.		
CASH.						
Bank of Bengal,.....Rs.	5,820	13	7	6,574	14	10
Cash in hand, ...	62	10	7	89	15	3
Deficient Balance, ...	368	5	6	470	0	3
Company's Paper, ...	500	0	0	500	0	0
Bank of Bengal on account of Journal, ...	108	12	5	108	12	5
Loan to Oriental Publication Fund, ...	0	0	0	2,500	0	0
Williams and Norgate,*	838	8	0	458	12	0
	7,699	2	1	10,702	6	9
OUTSTANDING.						
Contributions, ...	7,701	7	8	7,205	11	8
Admission Fee, ...				96	0	0
Library, Sale of Books, ...	473	0	0	329	4	0
Journal, Subscription to, ...	1,050	12	0	1,185	12	0
Ditto Sale of, ...	68	8	0	91	8	0
Sundries, ...	45	15	0	0	0	0
	9,315	10	8	8,908	3	8

* This sum is only nominal, a large sum being due to Messrs. W. and N. for books.

The 31st Dec. 1856.

G. D. BYSACK.

Liabilities.

Honourable, Sir J. W. Colvile, Knt., ... Rs.				291	8	0
J. W. Laidlay, Esq., ...				418	7	4
Journal Nos. IV. and V., ...	527	10	0			
——— No. VI. say, ...	250	0	0			
——— No. VII. or Index, say, ...	750	0	0			
				1,527	10	0
Catalogue of the Library, say, ...				600	0	0
Miscellaneous Printing, say, ...				135	0	0
Amount due for paving the Floor, ...				495	0	0
Deposits, ...				71	6	0
Sundries, ...				66	10	0
				3,605	9	4

W. S. ATKINSON,
Secretary.

LIST OF ORDINARY MEMBERS

OF THE

ASIATIC SOCIETY OF BENGAL,

The * distinguishes non-subscribing Members.

1856.

Abbott, Lieut.-Col. J. Bengal Artillery, Ishapur.
Allen, C. Esq. B. C. S. Calcutta.
*Anderson Lieut.-Col. W. Bengal Artillery, England.
Atkinson, W. S. Esq. Calcutta.
Avdall, Johannes Esq. Do.
Baker, Lieut.-Col. W. E., Bengal Engineers, Calcutta.
Banerjee, Rev. K. M. Bishop's College, Sibpur.
*Barlow, Sir R. Bart. B. C. S. England.
*Batten, J. H. Esq. B. C. S. Ditto.
Beadon, C. Esq. B. C. S. Calcutta.
Beaufort, F. L. Esq. B. C. S. Do.
*Beckwith, J. Esq. England.
*Benson, Lieut.-Col. R. Do.
Birch, Col. R. J. H., C. B. Calcutta.
Bivar, Captain H. S. 18th Regt. B. N. I. Northern Cachar.
Blagrave, Captain T. C. 26th Regt. B. N. I. Trans-sutledge Provinces.
Blundell, E. A. Esq. Singapore.
Bogle, Lieut.-Col. Sir A. Kt. Tennasserim Provinces.
Boycott, Dr. T., Bombay M. S. Calcutta.
*Brodie, Captain T. 5th Regt. B. N. I. Europe.
Burgess, Lieut. F. J. 17th Regt. B. N. I. Pilibheet.
Bushby, G. A. Esq. B. C. S. Hyderabad, since dead.
Busheerooddeen Sultan Mohammed Saheb, Calcutta.
Byng, Hon'ble Captain R. B. P. 62nd Regt. B. N. I. Cherrapunji, Khasia Hills.
*Campbell, Dr. A., B. M. S. Europe.
Chapman, C. Esq. B. C. S. Bhagulpore.
Chapman, R. B. Esq. B. C. S. Calcutta.
Christison, A. Esq. M. D. Gwalior.

Colvile, Hon'ble Sir J. W. Kt. Do.
Colvin, B. J. Esq. B. C. S. Calcutta.
*Colvin, J. H. B. Esq. B. C. S. Europe.
Colvin, Hon'ble J. R. B. C. S. Naineé Tal.
Cunliffe, C. W. Esq. B. C. S. Lucknow.
Curtis, J. F. Esq. Calcutta.
*Cust, R. N. Esq. B. C. S. Europe.
Dalton, Captain E. S. 9th Regt. B. N. I. Chota Nagpore.
De-Bourbel, Lieut. Raoul, Bengal Engrs. Calcutta.
Dickens, Captain C. H. Calcutta.
Drummond, Hon'ble E., B. C. S. Do.
*Edgworth, M. P. Esq. B. C. S. Europe.
Elliott, Hon'ble W., M. C. S. Madras.
Ellis, Major R. R. 23d Regt. B. N. I. Bundlekund.
Elphinstone, Lieut. N. W. 4th Regt. B. N. I. Peshawur.
Erskine, Major W. C. Commr. of Saugur, Nurbudda Territories, Jubulpore.
*Falconer, Dr. H., F. R. S., B. M. S. Europe.
Fayrer, Dr. J., B. M. S. Lucknow.
Forbes, Lieut. H. S., Artillery, Benares.
Freeling, G. H. Esq. B. C. S. Bundelkund.
Fytche, Major A. 70th Regt. B. N. I. Bassein.
*Gladstone, W. Esq. Europe.
Govindchundrá Senâ, Baboo, Calcutta.
Grant, D. Esq. B. C. S. Agra.
Grapel, W. Esq. Calcutta.
Gray, J. J. Esq. Maldah.
Grote, A. Esq. B. C. S. Calcutta.
Gubbins, C. Esq. B. C. S. Allighur.
Hall, F. E. Esq. M. A. Saugur.
Halsy, W. S. Esq. B. C. S. Gurruckpore.
Hamilton, R. Esq. Calcutta.
Hamilton, Sir R. N. E. Bart, B. C. S. Indore.
Hannyngton, Lieut.-Col. J. C. 24th Regt. B. N. I. Chota Nagpore.
Haughton, Captain, J. C. Maulmein.
Hayes, Captain F. C. C. 66th Regt. B. N. I. Lucknow.
Hearsay, Major-Genl. J. B. 10th Lt. Cavalry, Barrackpore.
Heatley, S. G. T. Esq. Delhi.

Herschel, W. J. Esq. B. C. S. Rajshaye.
*Hichens, Lieut. W. Bengal Engineers, Europe.
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Hossein Ally Mohamed, His Highness Ex-Ameer of Scinde, Calcutta.
Ishureepersaud, Rajah, Benares.
Jackson, L. S. Esq. Mauritius.
*Jackson, W. B. Esq. B. C. S. Europe.
Jadava Krishna Singh, Baboo, Calcutta.
James, Captain H. C. 32nd Regt, B. N. I. Darjiling.
Jenkins, Lieut.-Col. F. Assam.
Jerdon, T. C. Esq. M. M. S. Saugor.
*Johnstone, J. Esq. Europe.
Kabeeroodeen Ahmed Shah, Bahadoor, Sassaram.
Kay, Rev. W. D.D. Bishop's College.
*Laidlay, J. W. Esq. Europe.
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Layard, Captain F. P. 19th Regt. B. N. I. Berhampore.
*Lees, Lieut. W. N. 42 Regt. B. N. I. Europe.
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Macrae, Dr. A. C., B. M. S. Calcutta.
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*O'Shaughnessy, Sir, W. B. Knt, Europe.
Ouseley, Major W. R. Calcutta.
Phayre Major A. P. Pegu.
Pratab Chundrá Singh, Rajah, Pakparáh, Calcutta.
Pratt, The Venerable Archdeacon, J. H. Do.
*Prinsep, C. R. Esq. Europe.
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Radhá Nauth Sikdár, Baboo, Do.
Rajendrá Dutt, Baboo, Do.
Rajendrá Lál Mittrá, Baboo, Do.
Ramánauth Bánerjee, Baboo, Do.
Rámánauth Tagore, Baboo, Do.
Ramápersaud Roy, Baboo, Do.
Ramchund Singh, Rajah, Do.
Ramgopaul Ghose, Baboo, Do.
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*Roer, Dr. E. Europe.
*Rogers, Captain T. E. Europe.
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Royle, Dr. J., F. R. S. Europe.
Russel, R. H. Esq. B. C. S. Chittagong.
Samuells, E. A. Esq. B. C. S. Calcutta.
Saxton, Captain G. H. 38th M. N. I. Cuttack.
Schiller, F. Esq. Calcutta.
*SetonKarr W. Esq. Europe, since returned.
Sherer, J. W. Esq. B. C. S. Allighur.
Sherwill, Captain W. S. 66th Regt. B. N. I. Calcutta.
*Smith, Col. J. S. Europe.
Smith, Rev. W. O. Calcutta.

*Spankie, R. Esq. B. C. S. Saharunpore.
Spilsbury, Dr. G. G., B. M. S. Calcutta.
*Sprenger, Dr. A., B. M. S. Europe.
*Stephen, Major J. G. 8th N. I. Europe.
Stewart, Lieut. R. 22nd Regt. N. I. Cachar.
Strachey, Major R. Bengal Engrs. Calcutta.
*Strachey, J. E. Esq. B. C. S. Europe.
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Suttyasharan Ghosal, Rajah, Calcutta.
*Thomas, E. Esq. B. C. S. Europe.
Thomson, Dr. T., M. D., F. R. S. Calcutta.
Thornhill, C. B. Esq. B. C. S. Nainee-Tal.
Thuillier, Major H. L. Artillery Calcutta.
*Thurnburn, Captain F. H. V. 14th Regt. B. N. I. Europe.
Trevor, C. B. Esq. B. C. S. Calcutta.
Walker, H. Esq. B. M. S. Do.
Ward, J. J. Esq. B. C. S. Cuttack.
Watson, J. Esq. B. C. S. Berhampore.
Waugh, Col. A. S. Bengal Engrs. Mussoorie.
Willis, J. Esq. Calcutta.
Wilson, The Right Rev. D. Lord Bishop, Do.
Woodrow, H. Esq. Do.
Young, A. R. Esq. B. C. S. Do.
Young, Captain C. B. Bengal Engrs. Do.
Young, W. G. Esq. B. C. S. Do.
*Yule, Captain H. Bengal Engrs. Europe.

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J. W. B. Money, Esq. Calcutta.
Col. J. T. Smith, Europe.
Dr. G. von Liebig, B. M. S. Calcutta.
R. H. Russel, Esq. B. C. S. Chittagong.
Baboo Rajendrálál Mittrá, Calcutta.
Major R. R. W. Ellis, 23d Regt. B. N. I. Bundelkund.
J. F. Curtis, Esq. Calcutta.
Dr. F. J. Mouat, B. M. S. Do.
Lieut. R. De-Bourbel, Bengal Engrs. Do.
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A. R. Young, Esq. B. C. S. Calcutta.
Sultan Mahomed Busheerooden Saheb, Do.
R. B. Chapman, Esq. B. C. S. Do.
Lieut. H. S. Forbes, Artillery, Benares.
A. Roberts, Esq. B. C. S. Jubbulpore.
Rajah Suttyasharan Ghosal, Calcutta.
Major W. C. Erskine, Jubbulpore.
Lieut. Chancey, Agra.
Rajah Sreish Chundrá Ráya Bahádur, Krishnagur.

Loss of Members During the Year 1855.

Withdrawn.

H. V. Bayley, Esq. Calcutta.
E. Colebrooke, Esq. Do.
C. Huffnagle, Esq. Do.
Captain H. Hopkinson, Arracan.
G. F. Edmonstone, Esq. B. C. S. Calcutta.
G. Plowden, Esq. Nagpur.

By Death.

R. Houstoun, Esq. Calcutta.
Rajah Suttyacharan Ghosal, Bahádur, Do.
Dr. W. Montgomerie, Barrackpore.
Lieut. Chancey, Agra.
Rajah Sriésh Chundrá Raya, Bahádur, Krishnagur.
R. W. G. Frith, Esq. Jessore.
Major Gen. W. H. Sleeman, Europe.

Honorary Members.

Prof. A. Langlois, Paris.
Mons. J. J. Marcel, Do.
Rev. Dr. Buckland, London.

List of Honorary Members.

Baron Von Hammer-Purgstall, Aulic Counsellor, Vienna.
M. Garcin de Tassy, Membre de l' Institt, Paris.
Sir John Phillippart, London.
Count De Noe, Paris.
Prof. Francis Bopp, Memb. de l'Academie de Berlin.

Sir J. F. W. Herschel, F. R. S. London.
Col. W. H, Sykes, F. R. S. do.
General Count Ventura, Europe.
Prof. Lea, Philadelphia.
Prof. H. H. Wilson, F. R. S., London.
Prof. C. Lassen, Bonn.
Sir G. T. Staunton, Bart., F. R. S., London.
M. Reinaud, Memb. de l' Instit. Prof. de l' Arabe, Paris.
Dr. Ewald, Gottingen.
His Highness Hekekyan Bey, Egypt.
Right Hon'ble Sir Edward Ryan, Kt. London.
Prof. Jules Mohl, Memb. de l'Instit. Paris.
Capt. W. Munro, London.
His Highness the Nawab Nazim of Bengal, Murshidábád.
Dr. J. D. Hooker, R. N., F. R. S. London.
Prof. Henry, Princeton, United States.
Lt. Col. C. H. Rawlinson, Persia.
Lt. Col. Sir Proby T. Cautley, K. C. B. London.
Rájá Rádhákánta Deva Bahádur, Calcutta.

CORRESPONDING MEMBERS.

Kremer, Mons. A. von, Alexandria.
Porter, Rev. J. Damascus.
Schlagintweit, Mons. H.
Schlagintweit, Mons. A.
Smith, Dr. E. Beyrout.
Tailor, J. Esq. Bussorah.
Wilson, Dr. Bombay.

ASSOCIATE MEMBERS.

Blyth, E. Esq. Calcutta.
Káramt Ali, Syud, Hooghly.
Long, Rev. J. Calcutta.
MacGowan, Rev. J. Ningpo.
Piddington, H. Esq. Calcutta.
Stephenson, J. Esq. Europe.
Tregear, V. Esq. Bareilly.

For February, 1857.

At a monthly general meeting of the Asiatic Society, held on the 4th instant.

The Venerable Archdeacon J. H. Pratt, Senior Member present, in the Chair.

The proceedings of the December meeting were read and confirmed.

Presentations were received—

1. From the Government of Bombay, copies of "Selections from the Records of the Government."

The Secretary stated that these publications had been sent in compliance with a request made by the Council, who were glad to announce that the Government of Bombay had ordered that the Society should be supplied with all the Selections that may hereafter be published.

2. From the Imperial Academy of Sciences, Vienna, the latest publications of the Academy.

3. From the Government of the N. W. Provinces, through Captain Maclagan, Officiating Principal Thomason College of Civil Engineering, Roorkee, a copy of the Report on the Prisons of the N. W. Provinces, for the year 1855.

From Baron Von Hammer-Purgstall, a copy of his edition of Wasaf's celebrated history in Persian, with a German translation, vol. 1st.

Letters from Mr. Plowden, Lieut. Stewart, Dr. Martin, and Rev. K. M. Banerjee, announcing their wish to withdraw from the Society, were recorded.

The following gentlemen were named for ballot at the next meeting:—

Mr. H. F. Blanford, of the Geological Survey, proposed by Dr. Thomson, and seconded by Major Strachey, and

Mr. E. B. Cowell, Professor of History in the Presidency College, proposed by Mr. Atkinson, and seconded by A. Grote, Esq.

The Council submitted reports—

1. Recommending that Mr. John Nietner, of Ceylon, be elected a corresponding member of the Society.

2. Announcing that they have appointed the following Sub-Committees—

Finance.—C. Beadon, Esq. and Dr. T. Boycott.

Philology.—A. Grote, Esq., E. A. Samuells, Esq., Rev. J. Long, and F. E. Hall, Esq.

Library.—Dr. H. Walker, E. A. Samuells, Esq., W. Grapel, Esq., Bábu Ramápersád Roy, and Major Strachey.

Natural History.—Dr. G. G. Spilsbury, T. Oldham, Esq., Dr. H. Walker, Dr. T. Thomson, Dr. T. Boycott, Mr. E. A. Samuells, Captain C. B. Young, and Major Strachey.

Communications were received—

1. From Bábu Rádhánath Sikdár, forwarding abstracts of the Meteorological Register kept at the Office of the Surveyor-General, Calcutta, for the months of October and November last.

2. From Mr. Asst. Secy. Oldfield, enclosing copy of a Meteorological Register kept at the Office of the Secretary to the Government of the N. W. Provinces, Agra, for the month of November last.

3. From the Government of India, through Col. Birch, Secretary in the Military Department, forwarding a copy of the report by Mr. A. Schlagintweit on the proceedings of the Magnetic Survey in the Himalaya Mountain and in Western Thibet, from May to November, 1856, and that of Messrs. H. and R. Schlagintweit, on the same subject, from July to September, 1856.

4. From the Governor-General in Council, through Mr. Edmonstone, Secretary to the Government of India, a copy of an account of the mountain district forming the western boundary of the Lower Derajat, commonly called Roh, with notices of the tribes inhabiting it, by Lieut. H. G. Raverty, 3rd Regt. B. N. I.

5. From Capt. R. J. Leigh, Senior Assistant Commissioner to the Commander of Chota Nagpore, Notes on Jumeera Pat in Sirgooja, Chota Nagpore.

6. From Dr. Anderson, Oude Contingent, on the Indian species of the genus Lycium.

The Librarian submitted his usual monthly reports for December and January last.

Dr. Thomson read two reports from the Messrs. Schlagintweit of

their journey in Northern Thibet, and across the Koenluen, with explanatory remarks.

On the motion of the Chairman, the thanks of the meeting were voted to Dr. Thomson for his remarks upon these interesting reports.

Library.

The library has received the following accessions during the months of December and January last.

Presentations.

Geschichte Wassaf's. Persisch Herausgegeben und deutsch übersetzt von Hammer-Purgstall, 1 Band, *Wien*, 1856, 4to.—By the Baron Von Hammer-Purgstall.

Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften. Philos. Histor. Classe, Band, XVII. heft 3, Band XVIII. heft 1 and 2, Band XIX. heft 1 and 2 and Band XX. heft 1, 8vo.—By the Academy.

——————— Mathe. Natur. Hist. Classe, Band XVIII. heft 1 and 2, Band XIX. heft 1—2 and Band XX. heft 1, 8vo.—By the Same.

Denkschriften der ditto ditto. mathematisch naturwissenschaftliche Classe, Band X. and XI.—By the Same.

Archiv fur kunde österreichischer Geschichtsquellen. Band XV. heft 2 and Band XVI. heft 1, 8vo.—By the Same.

Fontes Rerum Austriacarum ditto ditto. Band XII. abtheilung 2, 8vo. —By the Same.

Jahrbücher der *K. K. Central*—Anstalt für Meteorologie und erdmagnetismus Von Karl Kriel. Band IV.—By the Same.

Almanach for 1856, 12mo.—By the Same.

Notizenblatt, Nos. 1—14, 1856.—By the Same.

Zeitschrift der Deutschen Morgenländischen Gesellschaft. Band X. heft 4, 8vo. *Liepzig*.—By the German Oriental Society.

Die Lieder des Hafis. Persisch met dem commentare des Sadi, herausgegeben von Hermann Brockhaus. Ersten Bandes, Drittes heft 4to. *Liepzig*, 1856.—By the Editor.

Memoirs of the Royal Astronomical Society, Vol. XXIV.—By the Society.

Notices of the Meetings of the Members of the Royal Institution of Great Britain, Part VI.—By the Royal Institution.

The Quarterly Journal of the Geological Society, Vol. XII. No. 47.—By the Society.

Monthly Notices of the Royal Astronomical Society from November, 1854 to June, 1855, Vol. XV.—By the Society.

Journal of the Proceedings of the Linnean Society, Vol. I. Nos. 1 and 2.—By the Society.

Address of T. Bell, Esq. President, read at the Anniversary of the above Society, May 24th, 1856.—By the Same.

Natuurkundig Tijdschrift voor Nederlandsch Indië. Deel XII. Derde Serie, Deel II. afl. 1—3, 8vo.—By the Natural History Society of Netherland's India.

The Journal of the Indian Archipelago and Eastern Asia, Vol. IX. Nos. 10 to 12, new series, Vol. I. No. 1, 2 copies.—By the Editor.

Ethnology of the Indo-Pacific Islands, by J. R. Logan, Esq. 2 copies. —By the Author.

Selections from the Records of the Bombay Government in the Police Branch of the Judicial Department, Nos. 1 and 2, (the last is an incomplete copy.)—By the Bombay Government.

——————— No. XXXV. new series, being a report on the Hilly region forming the Western part of the Collectorate of Kurrachee.—By the Same.

——————— from the Records of the Government of the N. W. Provinces, Parts XXVII. and XXVIII. the 1st chiefly on Public Works and the 2nd connected with the Revenue.—By the Government of the N. W. P.

——————— from the ditto of the Government of India, (Home Department,) No. XVII. Report on the Survey of the Mineral Deposits in Kumaon and on the Iron Smelting Operations experimentally conducted at Dechouree.—By the Government of India.

——————— (Foreign Department) No. XVIII.—General Report on the Administration of the Punjaub Territories from 1854-55 to 1855-56 inclusive.—By the Same.

——————— (Public Works Department) No. XIX.—Reports on the Communication between Calcutta and Dacca. 2nd. On the Progress of the Dacca and Arracan Road. 3rd. On the Creek Navigation from Akyab to Toungoop. 4th. On the Toungoop Mountain Road.—By the Same.

Report of the Inspector General of Prisons, North Western Provinces for 1855.—By Captain Maclagan, Offg. Principal of the Thomason Engineering College at Roorkee.

Half-yearly Report of the Committee of the Bengal Chamber of Commerce.—By the Chamber of Commerce.

Journal Asiatique for July and August, 1856, Nos. 28, 29 and 30.—By the Socie'te' Asiatique.

Report of Dispensary Cases of the Medical College Hospital.—By Dr. Chuckerbutty.

Essai sur la Littérature Indienne et études Sanscrites par P. Soupé, 12mo. *Paris.*—By the Author.

Catalogo dei Coleopteri della Lombardia compilat dai Antono. E. G. B. Villa. *Paris.*—By the Author through Mr. Piddington.

Catalogo dei Molluschi della Lombardia ditto, ditto. *Paris.*—By the same through ditto.

Dispositio Systematica Conchyliarum Terrestrium et Fluviatalium quæ adservantur in collectione fratrum, ditto.—By the same through ditto.

Intorno alla Malattia delle viti relazione di Antonio Villa. *Paris.*—By the same through ditto.

Notizie intorno al genere melania memoria Malacologica dei ditto. *Paris.*—By the same through ditto.

Osservazioni Entomologiche durante l' eclisse del 9 Ottobre, 1847. *Paris.*—By the same through ditto.

Intorno All' *Helix frigida* (2 leaves).—By the same through ditto.

The Oriental Christian Spectator, for November and December, 1856. —By the Editor.

The Oriental Baptist, for December, 1856 and January, 1857.—By the Editor.

The Calcutta Christian Observer, for ditto ditto.—By the Editors.

Upadeshak, for ditto ditto.—By the Editor.

The Durbin Newspaper, for ditto ditto.—By the Editor.

The Phœnix ditto, ditto ditto.—By the Editor.

The Morning Chronicle ditto, ditto ditto.—By the Editor.

The Tattwabodhini Patriká, for December, 1856,—By the Tattwabodhini' Sabha'.

The Indian Annals of Medical Science, No. VII. October, 1856.—By the Editor.

Exchanged.

The Athenæum, for October, 1856.

The London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science, No. 80.

The Calcutta Review, No. 54, for December, 1856.

Purchased.

Comptes Rendus, Nos. 12 to 15.

The Literary Gazette, Nos. 34 to 38.

The Annals and Magazine of Natural History, for November, 1856.

Revue des Deux Mondes, for October and November, 1856.

Revue et Magasin de Zoologie, No. 9.

A complete Grammar of the Dravidian or South-Indian family of Languages, by the Rev. R. Caldwell, *London*, 1856, 8vo.

Revue Contemporaine et Athenæum Francais, Nos. 109 and 110, 15th and 31st October.

Journal des Savants, for September, 1856.

Matlai ul Saadeyn, or a History of Iran and Turan, MS.

Hajjat ul Mahafel Tajkireh Dad Intáki.

Tárikh Aasam e Qufi. MS.

Kitáb ul Safá bataárif ul Haqúq ul Mustafí. MS.
Minháj ul Bayán. MS.
Milíkat Qáji ul Quzzát MS.
Aalám ul Nubih. MS.
Kitáb Zaholdáwá Ibn Janzi. MS.
Atish Kadah Azo. MS.
Mohit, An Arabic Encyclopedia, 5 Vols. incomplete. MS.
Badra ul Taam. MS. 2 vols.
Kitáb min I'd ul Khafá. MS.
Yusuf Zulekhá. MS.
Ríjúl ibn Haj. MS.
Hadikat ul Sahádayn, History of Martyrs; Turkish.

JOURNAL

OF THE

ASIATIC SOCIETY.

No. II. 1857.

Report on the Progress of the Magnetic Survey, and of the Researches connected with it, from November 1855 *to April* 1856.—*By* Adolphe Schlagintweit.

Outline of the Route.

I left Mussoorie in company with my brother, Robert Schlagintweit, on the 9th of November. After staying some days at Dehra, we proceeded *viâ* Roorkee to Agra, where we arrived on the 21st of November.

We left Agra on the 29th of November, and proceeded *viâ* Gwalior and Tehri to Saugor (14th to 19th December.) I separated at Saugor from my brother Robert, and went *viâ* Dumoh to Jubbulpore (23rd to 27th December,) and after examining the interesting geological structure of the Nerbudda valley, I proceeded to Nagpore across the elevated district of Seuni, which separates the Nerbudda from Berar.

From Nagpore I travelled *viâ* Chandra and Badrachellum along the Godavery valley to the sea-coast near Rajahmundry, where I arrived on the 1st of February. The latter road was especially selected for the purpose of tracing the sand-stone of the Nagpore territory down the Godavery to the Eastern Ghauts, and of examining personally the fossiliferous localities of Kota on the Pranteta and of Rajahmundry. I went through the Godavery Delta to Cocanada, and thence by sea to Madras. (Arrived at Madras 19th February.) I left Madras on the 24th and proceeded

to the districts of Pondicherry, South Arcot, and Trichinopoly, to examine the interesting cretaceous strata, which yielded a considerable number of fossil remains from different localities.

From Trichinopoly I went up by the Coonoor Ghaut to the Neilgherries, where I stayed from the 10th to the 17th of March.

I returned *viâ* Mysore and Bangalore to Madras; I left Madras for Calcutta by Steamer on the 1st of April, and I reached Simla on the 26th of April.

I was accompanied during the operations of this cold season by my draftsman, Eleazar Daniel, a guide in the Quarter Master General's Department, and I beg to bring to the notice of Government the very useful services rendered to me by this man in the prosecution of my researches, both during this season and previously in the Himalayas, and on the march from Bombay to Madras in 1855.

The geological and paleontological collection made during this season (eighteen boxes) have been forwarded to England through the Government of Madras.

Magnetic Observations.

Complete magnetic observations have been made on the following Stations:—

Agra.
Saugor.
Dumoh.
Jubbulpore.
Nagri, South of Nagpore.
Bibberi, between Chandra and Badrachellum (Magnetic dip only.)
Rajahmundry.
Cocanada (Declination only.)
Pondicherry (Dip only.)
Ootatoor, near Trichinopoly.
Ootacamund on the Neilgherry Hills.
Bangalore (Dip only.)

At Madras, the magnetic force of my needles was compared with the magnets of the Observatory; my needles were the same which had been compared with the Observatory needles in February

1855; and these comparisons will facilitate in a great measure the determination of the absolute values of the magnetic force for the different stations of observations.

All the magnetic instruments have remained in perfectly good order throughout the season.

My brother and myself had wished to subjoin to this Report a more elaborate *resumè* of the results of the magnetic observations now extending over a pretty considerable part of India, together with a map showing the magnetic curves; but we found such a work, with any attempt at the necessary accuracy, would have taken at least one or two months; so great an interruption of our movements would have necessitated a complete alteration of the plan of our operations during the ensuing season, and it would have been probably quite impossible to extend our researches for the present year into the most distant parts of the Western Himalayas.

Every one acquainted with the details connected with the final reduction and calculation of scientific data, like magnetic and other physical observations, will agree that it is quite useless to publish, in a hurry, provisional figures and results, which would all have to be cancelled and re-calculated for the final computation of the work.

We expect, if no unforeseen accident interrupts our progress, to be able to return to Europe in one year and a half, and we shall then endeavour to reduce and publish the results of our magnetic and other researches with the greatest regard to the accuracy necessary for final results, which may perhaps not prove quite unworthy of the patronage bestowed upon our scientific researches by the Court of Directors.

As a general result of our magnetic observations, I mention the fact, that the magnetic intensity increases in India from the South towards the North much more rapidly than might be expected from a consideration of the geographical latitude only. If the curves of the dip of the needle are laid down on a map, it is plainly seen that the spaces between them are very narrow when compared with other parts of the world.

Thus, in North West India, in a latitude of 30 and 31½ degrees, the dip of the needle is already as much as from 41 to 43 degrees.

I subjoin a list of the dip for some of the more important of my magnetic stations: several needles were used for the observations at the principal stations: —

Names of Stations.	*Magnetic Dip.*		
Ussilla, on the Tonse River, in Gurhwal, in the Himalayas,	42°	56′	4
Mana, in Gurhwal, in the Himalayas,	42	32	
Milum, in Kumaon, (Himalayas,)	41	4	
Mussoorie,	41	14	8
Simlah,	42	25	22
Nainee Tal in Kumaon,	38	37	
Saugor,	29	52	
Jubbulpore,	28	28	
Nagri, South of Nagpore,	22	38	
Rajahmundry,	16	16	
Madras, (1855 February,)	7	38	
Ootacamund, Neilgherries,	4	14	
Ootatoor, near Trichinopoly, in Southern India,	2	35	30

The magnetic dips observed by my brother, Hermann Schlagintweit, in the Eastern Himalayas and in Assam, agree very well with the results obtained by me in North-Western India, and they also show a very great dip of the needle.

The magnetic declination in the Himalayas of Kumaon and Gurhwal, visited in 1855, was every where Easterly varying from 3½ to 4 degrees.

The declination continued constantly to be to the Eastward along the route which I followed during the cold season from Agra to Rajahmundry and from Madras to the Neilgherries. The line which separates the Westerly declination of the Western Coast of Bombay from the country with Easterly declination lay to the West of the route followed. At the Neilgherries the declination was still Easterly, amounting to 53′ 30″ East.

Meteorological Observations.

The observations of the barometer and thermometer, &c., have been carried on, as before, regularly every day, and the height of all the important places on the march from Agra to Rajahmundry,

and from Madras *vid* Trichinopoly to the Neilgherries and back, have been determined by repeated barometric and hypsometric observations.

Particular attention was paid throughout this season to the temperature of the ground at various depths below the surface.

We have been fortunate enough to obtain very regular and careful observations of the temperature of the ground from the surface down to a depth of two metres (6½ feet) for the last twelve months from Madras and Calcutta. They were made at Madras under the superintendence of Major Worcester and of Major Jacob, and at Calcutta under the superintendence of Major Thuillier: the instruments used were brought out by us, were similar to those used by ourselves, and had been all carefully compared.

This will enable us to correct our own observations, made at various stations for the changes of temperature taking place from one month to another, and to make them all strictly comparable by reference to one common standard.

Our observations show that great confidence may be placed in the temperature of the ground, ascertained thus directly by thermometers buried at different depths below the surface, and the results for the decrease of the temperature, with height calculated from different stations, agree remarkably well. It seems that the temperature of springs is more liable to be effected by local causes connected with their mode of origin, &c. than the temperature of the dry ground, thus ascertained directly.

The following Table shows the temperature of the ground at some of my stations, where observations have been conducted for some time, in various localities :—

Temperature of the Ground at 2 metres (6½ feet) below the surface at some Stations between Agra and the Neilgherries.

	Temperature. centigrade.
Agra, 23rd February to 4th March, 1856, ...	23° 5′
Jubbulpore, 22nd to 27th December, 1855, ...	22 8
Sitabuldee, near Nagpore, 3rd to 9th January, 1856, ...	28 6

The temperature of the ground in the plains about Nag-

pore, which are so remarkable for their excessive summer heat, is very high, when compared with the stations in the more elevated districts of the Nerbudda and of Bundelkund.

Chandra, South-East of Nagpore, 14th to 16th January, 29 0

Rajahmundry, at the head of the Godavery Delta, 2nd to 8th February, ... 29 8

Cocanada, East of Rajahmundry, on the sea-coast, ... 29 6

The observations were made in three quite different localities, which gave 29° 5′ C., 29° 7′ C., and 29° 6′ C. The temperature of the ground is a little colder than at Rajahmundry, though Cocanada is 40 E. F. lower than the other place, on account of the great humidity of the sandy deposits in the lower parts of the Godavery Delta.

Trichinopoly, South of Madras, March 7th to 8th,..... ... 29 9

Ootacamund, on the Neilgherry Hills, March 12th to 17th, 18 8

A fine spring near the Ootacamund Church was, ... 18 0

Madras, March 19th to 24th, ... 29 8

If the temperature at Ootacamund (7410 E. F.—my place of observations) is compared either with Trichinopoly or with Madras, the decrease of the temperature of the ground for 1 degree C. corresponds to an elevation of from 660 to 670 E. F. A fine spring on the slopes of the Neilgherries, when compared with Trichinopoly, indicates even a more rapid decrease of temperature, 1 degree C. corresponding only to an elevation of 600 to 640 E. F.; and it seems quite certain that the decrease of the temperature of the ground on the isolated Neilgherry Hills is more rapid than in the Himalayas, where we formerly found an elevation of 720 E. F. to correspond to a decrease of the temperature of 1 degree C.

The observations on the temperature, velocity and quantity of water, &c., of various rivers, have been continued throughout the journey, and we think that these observations, when properly compared and worked out, may be not without some interest, both in reference to Meteorology and to Geology.

The temperature and quantity of water of springs has also been ascertained as often as opportunities would present themselves.

I had the opportunity of visiting an interesting hot spring on the Godavery, near Badrachellum, in the Eastern Ghauts, to the West of Rajahmundry.

It is situated in the sandy bed of the Godavery, about 3 miles from Badrachellum.

The water does not come to the surface, but is concealed under the alluvial sand which fills up the dry bed of the Godavery River. I met it after having dug a well of 7 feet depth. The highest temperature observed was 49 degrees C., but of course the temperature is much affected by the cold water of the Godavery constantly percolating through the sand. The presence of the hot springs is said to be visible during the rainy season, when the Godavery fills up its whole bed by some vapour of water rising just over the spot where the hot spring is situated. During the dry season the presence of the hot water under the sand is clearly indicated by the high temperature of the sands above it, which, at a depth of from 15 to 20 centimetres from the surface, had a temperature of from 36° to 38° centigrade. The heating influence of the spring upon the surface sands extends over as much as 200 to 240 square metres.

Its origin is certainly due to one of the great fissures of dislocation or faults which have accompanied the upheavement of the Eastern Ghauts, though in the immediate neighbourhood no peculiar alteration in the general features of the country is visible.

Geology.

The great surface of the country which I was able to traverse during this cold season offered a very favourable opportunity for geological observations.

I shall endeavour, in a few paragraphs, to mention some of the conclusions to which I think my observations will lead, but I must reserve it for some later period to illustrate these statements with the necessary detailed sections and notes.

1. The sandy deposits of the plains of Hindustan, which are bordered by the Himalayas and by the mountains of Bundelkund,

are not a deposit by rivers, but a deposit in a large basin of water, which very probably was fresh water; they are in no way to be considered as fluviatile deposits by the Ganges or Jumna; the material for their formation has been brought down from the Himalayas as well as from the ranges of Bundelkund, and I am quite convinced that the very extensive denudation and excavation of the sand-stone ranges of Bundelkund, Gwalior, &c., has contributed in a very considerable degree to the formation of the deposits in the plains of Hindustan.

The formation of *kunker* is evidently generally due to a process of segregation of the whole deposit, but besides this concretionary *kunker*, there occurs in some places a different formation of *black kunker*, which extends horizontally sometimes to very great distances; it occurs not very far below the surface and is generally merely covered by drifted sands; its origin has been connected with the drying up of old lakes (jheels) similar to those found at present in some parts of Hindustan.

2. To the Southward of Agra, in Bundelkund and Gwalior, occurs a formation of sand-stone with shales absolutely identical with similar rocks, which cover a great extent of surface in India.

I shall venture to offer a few general remarks upon these rocks. The formation occurs in Bundelkund, in various parts of the environs of the Nerbudda valley, in many places of the Nagpore territory, and in the Eastern Ghauts throughout their extent: it is there apparent in parts in extensive masses as in the Cuddapah, Bangapilly, and Kurnool districts. In other places only occasional masses or strips of sand-stone shales are met with, and the formation has been broken up and destroyed to a great extent by the granitic outbreak of the Ghauts. The formation can be traced, though often interrupted by the granitic masses in the Eastern Ghauts, to the south of Madras.

I met sand-stones and marls undoubtedly identical with the Nagpore rocks and containing faint vegetable remains as Strepermatoor, 30 miles west of Madras, on the Bangalore road, where they crop out in some places around the tank.

Another interesting locality which I had the opportunity of visiting was at Trivacery or Teruvacery, a village 18 miles west of Pondi-

cherry. The sand-stone of Trivacery is absolutely identical in all petrographical characters with many specimens from the Nagpore territory; it also contained many fossil trees, which I am convinced will prove the same as those found in some places of the Nagpore territory, as well as near Raneegunge to the west of Burdwan and Calcutta.

I think that the coal-bearing strata of Raneegunge, in the hills west of Calcutta, belong to the same formation with the rest of the above quoted localities.

Whether the lime-stone and shales of Kulladghee, which I had occasion to investigate in the cold season of 1854-55, constitute a formation different from the above or not, I am unable to say at present, from want of my journals and specimens, which have been all sent away.

The character of this extensive formation of sand-stones and shales varies considerably; generally the sand-stones can be well distinguished from the underlying shales.

In some localities the distinct stratification is clearly visible, and the sand-stones, more or less horizontal, repose contrary to the ordinary laws of conformity, upon the out-crop of the inclined shales underneath: this is the case in the Gwalior territory, in Bangapilly, Cuddapah, &c.

In other districts, for instance at Nagpore, near Chanda, and on the Pranheeta, the marly slates and sandstone seem to lie conformably, and have both been subject apparently to the same bendings and foldings.

But though the characters of the rock are very variable, it is nearly always possible to trace the one variety into the other; occasionally the mere lithological resemblance, even between very distant points of the formation, is very striking.

Fossil remains have been found in several places; the best known locality is at present the Nagpore territory, where the persevering researches of the Reverend R. Hislop have brought to light a rich collection of fossil plants and several very interesting animal remains.

I have much pleasure in acknowledging my obligations to Mr.

Hislop, who was kind enough to give me every assistance and information during my stay at Nagpore.

I met fossil wood and some fragments of fossil bones in several places along the Godavery. Near the junction of the latter river with the Pranheeta, at Kota, near Shironcha, are found very curious remains of fossil fishes and reptiles connected with a thin bed of coal. These fossils were first discovered by the late Drs. Bell and Walker, and I trust that the collection which I was enabled to make in this locality may not prove without some interest even after the very fine specimens sent to England by the two above-mentioned gentlemen.

Vegetable remains can be traced in many places in the sandstones and marls, though the appearance is often very much changed. Leaves, together with fossil wood, were met with in the Eastern Ghauts on the Godavery and at Trivacery, 18 miles west of Pondicherry.

It seems that the formation has been deposited throughout in fresh-water lakes, but it would be premature to express at present positive opinion on the geological age of the formation. It appears from some fossil remains that it may be oolitic; but only a close enumeration and comparison of all the fossils hitherto collected and brought to Europe will be able to decide this question.

With reference to the difficult question of the age of the sandstone formation, it is worth mentioning that I have seen the sandstone, with fossil trees, clearly overlaid by the cretaceous strata in the Pondicherry district, so that it cannot be younger than Jurassic.

The existence of coal in this formation is connected with the vegetable remains, which as I have mentioned can be traced in many places. The coal-seams are generally not of great thickness, and the coal is in most places impure, but larger seams have been found in some localities, in Burdwan, the Palamow Hills, the Nerbudda Valley, &c., some of which are worked pretty extensively.

3. The great trap formation of the Deccan has been visited during this season on its Eastern borders. I have been able to examine the fresh-water strata interposed between the trap layers in many localities, and I have traced the continuation of this thin

fresh-water stratum containing only fresh water-shells (Physa, Melania, Unio, &c.) down the Godavery to Rajahmundry. Near this place occurs a very curious mixture of the unmistakeable fresh-water Physa Prinsepii, with numerous true marine species.

The lime-stone stratum, with these marine shells, lies like the fresh-water lime-stone of the Deccan between a mass of trap (Dolerite); it reposes upon a cellular trap, and is covered by upwards of 50 feet of nodular trap. It is found at Cateroo, 3 miles from Rajahmundry, and at the Pangadi Hills, 10 miles from the latter place, and is from 2 to 2½ feet thick. In some places the rock is quite full of marine shells, which belong to Arca, Cardium, Venus, Cerithium, Turbinella, &c. I also found a large well-preserved nautilus at Pangadi, which will serve to throw some light upon the age of the intertrapian lacustrine and marine formation of India.

The connection between these strata of Rajahmundry and the merely fresh-water deposits of the Deccan is quite clear; it seems to have been a deposit probably in a series of great lakes growing brackish to the Eastward. The fresh-water Physa Prinsepii, not to be distinguished from the Deccan specimens, lies side by side with Cerithium, Arca, and other marine shells.

The fresh-water intertrapian stratum of the Deccan is from 2 to 4 feet thick; it consists in part of variously coloured marls, in part of impure lime-stone.

In the parts where I had the opportunity of examining it, near Saugor, near Lenni, Nagpore, &c., it generally is covered by globular black trap of from 40 to 70 feet thick only, which seems to have been the most recent of the trap effusions in this part of the country. It rests upon a cellular Amygdaloid or Wacke, into which it sometimes graduates, so as to make it impossible to draw any distinct line of separation between the two rocks. I also observed frequently quite isolated patches of a very soft cellular Wacke between the fresh-water strata themselves. It seems to me that the fresh-water strata have been deposited at the bottom of lakes covered with volcanic ashes, and it is quite probable that occasional showers of ashes still fell occasionally during the period of the

formation of the calcareous and marly deposit at the bottom of the lakes.*

Another interesting phenomenon connected with the intertrapian formation is the very regular and horizontal outline shown by the thin line of the sedimentary stratum on the exposed sides of the hills; and the fact, that though no bending or contortion of the stratum is visible, it may be found at a much higher or lower level on one of the next hills. From a careful examination of the localities, I think that this fact can only be due to the existence of extensive faults and to phenomena of subsidence and elevation of whole mountains *en masse* caused by them. Of the existence of such faults, evident proofs can be found in many localities.

I finally wish to mention, that the intertrapian lacustrine formation is not confined to the borders of the grand trap mass, but that it can be traced, though often altered and scarcely recognizable, to a great distance to the Westward in the interior of the trap mass.

4. On the road from Madras to Trichinopoly I had an opportunity of examining the cretaceous formation, which seems to be entirely limited to this part of India.

The cretaceous strata cover in these districts an extensive surface of country, and the fossil remains are found scattered throughout the formation in many localities. Assisted by my draftsman, Eleazar, and some other of my men, who have now been instructed in collecting similar objects, I have been able to obtain a pretty fine and extensive collection of the cretaceous fossils from very various localities. The whole of the strata from the Pondicherry district down to the most South-Western localities in the Trichinopoly district (circumference 120 miles) belong to the same formation; the rocks are quite the same and the fossil remains are nearly identical.

* I mentioned in the first Report for the cold season of 1854-55, that the effusion of the trap in the Deccan had taken place under heavy pressure, probably of sea-water. I now beg to say that it is much more probable that the effusion has taken place at the bottom of extensive fresh-water lakes than at the bottom of the ocean.

There exist local accumulations of bivalve shells, constituting neally the whole mass of the rock, for instance at Garudamgalum, near Ootatoor (Trichinopoly district) where the rock is quarried, polished, and sold as "Trichinopoly Marble."

These accumulations may perhaps have been old sea beaches, but they do not constitute a separate or more recent formation than the strata with the ammonites. Close to the accumulations of bivalve shells occur strata containing large ammonites, some of $1\frac{1}{2}$ feet in diameter; and I even saw ammonites in the rock full of the bivalve shells.

The cretaceous strata seem to have been generally quite undisturbed; they repose horizontally upon the oolitic sand-stones at Trivacery and upon the crystalline schists in other localities.

The cretaceous strata are covered by a deposit of rolled pebbles, with red lateritic earth, which is evidently more modern and brought down at a former period by violent currents of water from the Eastern Ghauts.

The deposition of the cretaceous strata took place after the principal upheavement of the Eastern Ghauts, since these strata are nowhere seen to penetrate into the interior of the Ghauts or to the Mysore and Deccan plateaux, and since they have not been affected by the upheaving and disturbing agency, which must have accompanied the formation of the Ghaut Range.

5. During my visit to the Neilgherries and the Mysore, I was especially anxious to extend my observations in reference to the direction of faults and planes of foliation in the crystalline rocks of Southern India. My observations in various parts of India have convinced me, that the lines of faults and joints and of the direction of the planes of foliation and cleavage, when laid down upon maps, show many very striking coincidences with the main direction of mountain chains and rivers.

The following are the most important directions of fault and cleavage planes occurring in the Neilgherries and the Mysore plateau:—

1. From N. N. E. to S. S. W., which coincides with the mean direction of the Eastern Ghauts, where the cleavage planes run generally in this direction.

2. From S. S. W. to N. N. E., which is the line of the Western Ghauts. On the Neilgherries these two directions of disturbance actually meet. The former one is clearly represented by the direction of Eastern border of the Neilgherry plateau and by the Dodabetta range, the latter one by the fine mountain range of the Koondahs, which rise to the South and South-West of Ootacamund.

3. Lines of extensive faults are clearly traceable on the Mysore plateau, running from West to East. The direction of some of the principal rivers, as the Mayar, the Cavery, &c., is connected with them. Along the valley of the Mayar the fault is very clearly visible.

4. A fourth line of disturbance runs from North to South through the Mysore country. It is less marked by the direction of the planes of cleavage or foliation than by extensive dykes of greenstone and of a fine large-grained granite, which run in this direction often for many miles.

An Account of a Journey across the Chains of the Kuenluen, from Ladak to Khotan.—By HERMANN *and* ROBERT SCHLAGINTWEIT, ESQS.

Proceeding from Ladak through Nubra to the Pass of Karakorum, we were able to pass the frontier of Ladak and to extend our observations over very nearly the whole breadth of the Kuenluen mountains. We estimate (not having yet reduced our astronomical observations of latitudes and longitudes) that the distance we travelled in Turkistan before returning again into the Thibetan territory is very nearly 300 English miles.

We left Ladak July 24th, and went by the Laoche Pass (17,600 feet*) to the valley of the Shayok and to Nubra. From Nubra we crossed the Sassar Pass, about 17,500 feet. We stayed two days in the Pass itself to make Magnetic observations, and to enable us to reach the summit of the Sassarla, (Sassar mountain 20,000 feet) from which we had, as we anticipated, a very extensive and interesting view of the large groups of glaciers surrounding the Pass, one of the largest accumulation of glaciers in the Kuenluen.

* The heights given in this Report are only approximations. Very good corresponding observations were taken at Ladak, but we have not yet been able to calculate them in detail.

From the Sassar Pass, our route brought us to the large plateau to the south of Karakoram, the mean elevation of which reaches 17,100 feet. On the 9th of August, we crossed without any difficulty the frontier of Turkistan. We were accompanied by Mani, the Putwaree of Milum, by Makshoot, a former servant of Moorcroft's, and by Mahomed Amin, an aged Turkistaní, whom we found particularly useful on account of his general knowledge of the country. We had besides six horses for ourselves and servants, (the three men above mentioned,) thirteen horses for baggage, five Yarkandis, and some fifteen sheep and goats. The Yarkandis with horses and provisions we sent secretly on ahead, and we only met them, as by chance, in Nubra. Our servants from India accompanied us as far as Sassar, from whence we travelled dressed as Yarkandis. The day before we passed Karakorum, (18,300 feet) we met a large caravan of merchants from Yarkand, to whom we gave out that we intended to march on along the Yarkand road; but as soon as we had passed Karakorum, we left this road and went to the east, to Kissilkorum, (17,400 feet) the high water-shed between the Yarkand and the Karakash rivers. We crossed in one day four Passes, more than 17,000 feet above the level of the sea, but only slightly elevated above the surrounding plateaux.

We followed from Kissilkorum the direction of the principal chain of the Kuenluen, now turning to the south south-east, till we reached a lake, Kiúk-kiul, (*ú* like *oo* in wood; *u* like *u* in but) slightly salt, situated at the northern foot of the Changchenmo. Up to this point our route had chiefly led us over extensive plateaux, 16,000 to 17,000 feet above the level of the sea, of a much greater extent than those to the south of Karakorum; but from this lake we followed the valley of the Karakash river, to the right of which there are no plateaux, while to the left they extend as far as Suget.

The sterility of the plateau to the north of Karakorum, as well as of the Karakash valley, is quite surprising: without the frequent, though not very abundant, precipitation of snow, chiefly caused by the great elevation of the ridges, these plateaux would be complete deserts. In a march of eighteen miles, we only met with four species of plants; for many days grass was exceedingly scarce, while for several days we had absolutely none, the grass round the

Kiúk-kiul lake being the only exception. We had taken with us a small supply of gram, anticipating in some degree the sterility we met with, which saved our horses from absolute starvation. Nevertheless, they suffered dreadfully, the more so as the great scarcity of grass compelled us to make long marches of twenty to twenty-four miles a day. Close to the Kiúk-kiul we met with a very interesting group of more than fifty hot springs, chiefly containing muriate of soda (common salt), and a great quantity of carbonic acid. The temperature varied from 25° to 49° C. = 77° to 120° Fahrenheit.

We had already met in the valley of the Nubra with two other groups, the one near Panamick, (hottest spring, 78.1°=172.6° Fahrenheit); the other near Changlung, (74.1° C. = 165.4° Fahrenheit). After a march of seventy miles in four days, we came to Súmgal, where a route branches off to the valley of Bushia, and to Elchi the capital of Khotan.

Before reaching Súmgal we had nearly lost our road. Mahomed Amin, who generally accompanied us, had gone in front, whilst we were engaged in measuring the breadth of the river and the depth of its erosion. We saw him distinctly with our telescope on the other side of it, and followed his and his horse's foot-prints until six P. M., when they again crossed the water. But our people being behind us, we turned back to meet them; but no trace of them was found, as they had evidently also lost their way and had kept on the wrong bank of the river: we again tried, it being now eight o'clock P. M., to cross the river, which is here divided into many branches, but were overtaken in the middle by nightfall, and were obliged to stop on a low mud bank. Our first care was to secure our two horses, fastening their legs with the straps of our sextant and our prismatic compass. We now observed, on a little Myricaria stem close to our resting-place, that the water was gradually rising from the melting of a late fall of snow. Fortunately the great breadth of the river secured our bank from being overflowed, though the moisture of the ground was rapidly increasing.

The next day, August the 20th, we found our people in the afternoon, and Amin at Súmgal in the evening; our horses had suffered so much from fatigue as well as from scarcity of food, that on the

way from Kissilkorum to Súmgal we lost seven out of nineteen. From Súmgal a road branches off, as mentioned above, to Bushia and Elchi, and as there was some hope of procuring at these places fresh horses, or Yâks, as well as food, our men were easily persuaded to proceed in this direction.

We started August 22nd, with only two laden horses; we had to cross a glacier Pass, 17,000 feet. At ten A. M. we were overtaken by a violent snow-storm, lasting till six P. M. The road was extremely difficult for the horses, on account of a number of fissures in the glacier. When we had gone some little distance farther, our people finding it impossible to follow with the laden horses left every thing behind—tent, blankets, and a small trunk containing merchandise, money,* and instruments, (the most necessary ones we happily carried ourselves on the ice,) taking only a little food with them; but even then they followed so slowly, that they were unable to cross the last terminal moraine of the glacier before nightfall. We were compelled in consequence to be in the snow all night in our wet clothes. The snow had ceased falling, but the cold was still so very great, (11.4° C. = 11.5° Fahrenheit) that two of our horses died from it during the night; one on the glacier with our people, and the other at our feet.

In Bushia, which we reached two days later, on the 25th of August, we met with a very cordial reception from the inhabitants, and got horses, yâks, sheep, provisions, &c., promising to pay for them in Súmgal. These people, half-nomadic Tartars, seemed very honest, and the prices they asked were very moderate. They inhabit caves fitted up like houses in the cold season, and tents during the rest of the year.

The height of Bushia is 9,200 feet. We dressed like the inhabitants, and had also learned the necessary forms of salutation. The people here are far from being savages, but on the contrary very ceremonious. They took us, never having seen any Europeans, for what we represented ourselves to be—merchants from Delhi. Elchi, the capital of Khotan, was only distant two days' journey; but we found the people very reluctant to accompany us there, for

* We used very little money, but chiefly goods, rich Indian cloth, for barter.

they feared the Chinese soldiers stationed not far from Bushia; besides the time was far advanced for our intended researches in Cashmere. The distance from the Northern foot of the Kuenluen was one and a half day's journey; already at Bushia the Alpine character of the Central Kuenluen had disappeared, the height of the summits in the environs of Bushia not exceeding 11,000 feet. We left Súmgal August the 29th, and followed for three marches the valley of the Karakash, which flows from Súmgal to Suget in a westerly direction, then takes a sharp turn to the north, and from thence flows for the most part in an east north-easterly direction.

We met on this road with very large quarries and mines, from which is dug the Yashem stone (the Fahde), and which are resorted to by people living at great distances. We were enabled to procure for future analysis a good supply of the different varieties of this stone, which is much valued throughout Central Asia. Suget, a halting-place on the winter road to Yarkand, is six ordinary marches distant from Karakorum. From Suget to Karakash, another town of Khotan, is six marches. We started after due deliberation on the 1st of September with Mahomed Amin and only two laden horses, leaving our fresh horses and every thing else we could do without, including our little tent. Some instruments, blankets, furs and provisions were all our baggage. We succeeded in making in twelve days about 220 English miles across the central parts of the Kuenluen, (twenty-five marches of the Russian itinerary route from Yarkand to Leh). We reached Leh in the evening of the 12th September. This river, as well as the other streams descending from the northern slope of the Kuenluen, disappears entirely after a short course in the sandy plains surrounding lake Lop.

The country between Suget and the Karakorum was new to us. We had here a very good opportunity of examining and determining the mean elevation of the plateau above mentioned. We also had, before we reached the Pass, a very extensive view of the highest central peaks, which we tried to draw in the scale of one degree = one centimetre in length.

From this point we wished to follow the Shayok river, as this route would have taken us through a country new to us. We also

met amongst many others a caravan with fourteen camels (the Camelus Bactrianus) with two humps, frequently used for carrying loads on the Yarkand road; these stout animals constantly cross the elevated crests on the Yarkand road up to 18,000 feet, and seem apparently little affected by the cold of these heights, the native climate of wild Yâks and Kiangs.

We succeeded in procuring two of them, remarkably tame animals, expecting to find them particularly useful in crossing the frequent rapids met with in the Shayok river. But notwithstanding the height and power of these animals, we found it impossible to go down the Shayok Valley. The river had much subsided, compared with its height when we crossed it near Kardong, in the beginning of August; but it was still far from passable, (which it is from the end of October to the end of March). We were obliged therefore to leave the road down the Shayok Valley at Súltan Chúskúl, to go up the Valley to Sassar, and follow from thence our old route. We had to cross in one day, not without difficulty, the Shayok river five times before we reached Sassar.

During our absence from Leh, our Native Doctor Hurkishen had made meteorological observations, and what was especially valuable to us, detailed Barometric and Magnetic observations. He had completed a plan of Leh, the chief points of which had been laid down before our departure, and collectors had been sent to different parts of Ladak to complete Geological and Botanical collections, particularly with reference to geographical distribution: we found all our orders had been very carefully executed.

Our horses and luggage left behind at Suget, not arriving for thirteen days after us, (September 25th,) we had time, besides finishing our plans and drawings, to take numerous casts in plaster of Paris* of the different tribes, as we had already done in other parts of India and the Himalayas. The variety of tribes which is to be found in Leh is particularly great, on account of its extended trade with the different parts of Central Asia.

* We are obliged to E. H. Longden, Esq., Superintendent of the *Secundra Press* at Agra, for a very valuable supply of plaster of Paris, when our own stock was nearly exhausted.

General Remarks on the Observations made during the Journey, from Ladak to Khotan.

Magnetic Observations.

In Leh, two complete series of Magnetic observations had been made before our departure, and two Magnetic apparatus had been put up during our absence, one for the observation of the daily variation of the declination, another for the daily variation of the horizontal intensity. Observations were taken six times a day by our Native Doctor Hurkishen the whole time we were absent. During our journey to Turkistan we had with us a Declinometer, a Vibration Apparatus, and a Dipcircle. We took observations on the Sassar Pass, on Karakorum, in Sumgal, and in Suget. The mean of the declination at Leh was, from July to September, very near 2° 44′ East. The declination decreased on the points above mentioned, and was in Suget 2° 12′ East.

The mean for the inclination was—

At Leh, M.....	46°	50′	20″
On Sassar Pass,.....	48	11	75
On Karakorum Pass, ...	49	8	0
In Sumgal,.....	50	1	3
In Suget, ...	50	4	5

Geographical Remarks.

Extensive plateaux are to be found on both sides of Karakorum, being most extensive to the north and west of the Pass. Eastward the plateaux terminate completely in the longitude of Changchenmo, where we met again with valleys and ridges, both well defined. A similar succession of ridges and valleys is also the principal character of Ladak, where plateaux are generally not met with. The mean height of the plateau to the north and west of Karakorum is from 16,800 to 17,000 feet. The point where the plateaux reach the greatest mean elevation, probably the loftiest plateau in the world, is a little to the north of the sources of the Shayok. To the south of this region between Karakorum and the Nubra Valley, a second region of a great general elevation was found, in which some single peaks seem to attain the greatest absolute height. We had an opportunity of measuring some peaks one of which was 24,000 feet.

The mean direction of the principal crest of the Kuenluen which forms the water-shed between Ladak and Turkistan, runs north-west to south-east from the sources of the Yarkand river to Rudok. Another more northern chain independent of this, and of a comparatively smaller elevation, runs from west to east; this is the chain over which Passes lead from Bushia and Elchi to Yurunkash, Keria, &c. The fall of the upper portion of the rivers Yarkand Deriao and Karakash Deriao is not great. But the rivers descending from the other ridge, which runs from west to east, have a much more rapid descent, particularly the rivers on the northern side of this ridge.

We succeeded in procuring, besides our own routes, itineraries of the commercial routes to Badakshan, Yarkand, Kashgar, Kokand and to Aksu, from the different caravans we met with. The information thus obtained from independent sources was very consistent as regarded the number and succession of the halting-places and their distances from each other. It is scarcely necessary to add that we found Baron Humboldt's "Map of the Mountain Systems and the Volcanoes of Central Asia" of the greatest assistance in making our own observations and in prosecuting enquiries for routes.

Geology.

To the north of the Nubra Valley much lime (chiefly carbonate, combined with large masses of sulphate of lime) is met with; but alternating in such a manner with crystalline rocks, that it can scarcely be thought to be sedimentary; it also appears nowhere to contain fossil remains. On the northern margin of the Kuenluen, crystalline rocks appear to extend to the foot of the mountains, and if a margin of sedimentary rocks exists, it can only be very narrow.

We very often met with a hard crystalline rock, not unlike pudding stone, which contained enclosures of spherical and angular forms. We also came to quarries, where the Yashem stone is dug; they are at Gulbagashen in the valley of Karakash. We took a good quantity of the best specimens with us for future analysis.

Two systems of cleavage predominate, which are particularly regular in the central parts of the Kuenluen: the steeper one dips North 30° to 50° East, the other South 20 to 40° West.

The erosion is very deep in the valleys on the northern margin of the Kuenluen. In the inner parts of the Kuenluen, the valleys present for the most part a Thibetan character, displaying a broad basis slightly inclined, over which the water spreads itself in many channels, and afterwards evaporates completely.

Extensive glaciers are chiefly met with in the range to the north of Karakorum, (*i. e.* in the ridge above mentioned in a direction from west to east,) and another group, apparently the largest accumulation of glaciers in the Kuenluen, was found in the environs of Sassar, but both much smaller than the groups near the Diamer, to the north-west, investigated by our brother Adolphe.

Two fine groups of hot springs of analogous character, (both depositing great quantities of lime, and smelling slightly of hydrosulphuric gas) were found in Nubra. The temperature of the hottest springs of the group near Panamick was 78° C. = 172.6° Fahr.; of the other group near Changlung, 74.1° C. = 165.4° Fahr. A spring of ordinary water at the same height as Changlung had a temperature of 10.1° C. = 50.2° Fahr. There is another group of hot springs mentioned above, situated a little below the lake Kiúk-kiul, (14,800 feet). Their deposits are nearly pure muriate of soda. These springs, more than fifty in number, are partly situated in the very bed of the river Karakash, and surrounded closely by its cold waters. The temperature of these springs is from 25° to 49° C. = 77° to 120° Fahrenheit.

In these neighbourhoods, and also lower down in the Karakash Valley, are found several groups of salt pools, conical depressions of the ground filled with solid salt and a concentrated solution of salt. The salt was nearly pure table salt; but some pools were not yet so far advanced in the progress of concentration that solid salt had deposited itself.

The high temperature of these salt pools was very remarkable. The salt deposit forms a stratum over the excavation containing the salt-water and a nearly complete cover on its surface. The great diathermaneity of salt (a stratum of salt allows 92 out of 100 thermic rays to pass through it, while an equal thickness of glass only allows 39,) is the principal cause of the excess of temperature In consequence of this physical property of the salt, the tempera-

ture of the water below the cover is considerably raised by insolation during the day, whilst it loses little heat by nocturnal radiation, (a phenomenon of accumulated heat analogous to that of Saussure's and Sir John Herschel's Heliothermometers). In the salt pools the loss of heat by noctural radiation is still more lessened by a circumstance peculiar to perfectly concentrated saline solutions, namely, that all the little openings in the superficial salt cover which exist during the day, are closed by a deposit of solid salt as soon as the temperature begins to fall in the evening. In the lower strata of the water contained in those conical reservoirs the temperature decreases very rapidly, a phenomenon which seems perfectly to agree with the explanation given above, but to exclude the supposition that the temperature is raised by heat having its origin in the lower strata of the ground, as is the case in hot springs. Besides, artificial salt pools were constructed immediately after our return to Leh, and we used the materials, (salt and clay) which we had brought for this purpose from the salt pools in the Karakash Valley. The variation of temperature in these artificial salt pools was observed from hour to hour, and these observations equally showed that the excess of temperature only begins after the formation of a solid stratum of salt, which more or less closes up the surface of the pools.

Meteorology.

The snow line (the highest summer limit of perpetual snow), was found to attain the greatest height in the environs of Karakorum, its height exceeding 18,600 feet. The snow line sinks very little towards Leh, but considerably on the northern slopes of the mountains towards Khotan. Near Oitash, above Bushia, we found its height not exceeding 16,000 feet.

Bas-Névés completely hidden under detritus, a sort of subterranean glaciers, but generally speaking of limited extent, which we had seen first on the slopes descending from the Parang Pass, occurred again in the Kuenluen on the northern slopes of the Sassar mountains. In this group, which we crossed twice, we had an opportunity of determining the variation of the snow line. In the middle of September it had already sensibly descended, whilst the

isolated low snow beds in protected places and the subterranean Bas-Névés above mentioned had, comparatively speaking, very much diminished by the melting which still continued in the lower parts of the slopes and valleys.

The dryness of the atmosphere appears to be greatest in the environs of Karakorum, but it rapidly decreases in the direction of Khotan. From various and apparently very consistent data, which we obtained from the inhabitants we estimate ..... inches.

The direction of the wind is chiefly northerly. The south winds which predominate in Central Ladak and in Kunawer are perfectly unknown on the northern side of the Kuenluen.

The phenomenon of the second illumination of snow-clad mountains after sunset (analogous to the glowing of the Alpine snows) was seen several times on those nights when there was no moon. We saw it particularly well near Chibra to the north of Karakorum. Judging of it as we saw it there, we think it to be quite independent of a spontaneous development of light from snow. It was evidently caused by an illumination of the snow-fields from the west north-western parts of the sky. This illumination is only visible sometime after the sun has set, namely, when the projection of the earth's shade has reached an angular height exceeding that of the mountains, and when the atmospheric light has decreased so much that the atmosphere behind the mountains reflects less light than the snow-clad slopes of the mountains exposed to the west north-west.

At heights above 17,000 feet we found in the Kuenluen, the transparency of the atmosphere so great, that the small and the large circles in Saussure's diaphanometer (as we had used it also formerly in the Alps of Europe, and described in our "Researches") disappeared under the same angles, and therefore the transparency above 17,000 feet was so great that a stratum of air, 3,000 to 3,500 feet thick, absorbed the light in so small a degree, that the absorption to our eyes became unappreciable. It was then determined by another method, by which a stratum of much greater thickness could be examined.

The transparency of the atmosphere is often very much affected by a peculiar haze not affecting the psychrometer; we found this

dry haze particularly frequent when we were on the plateau to the north of Karakorum.

The height of the clouds is generally very great. Even during the rain, which fell from the 25th to the 28th July, it exceeded 17,000 feet. Fogs in the valley of the Indus at 11,800 feet were observed only once on the 23rd September, on which day the rain began at 1-10 A. M. Its temperature was, when it first fell, 4.6° C. = 8°.3 Fahr. below the temperature of the air, (air, 7.9° rain 3.3° C.); it only reached the temperature of the air at 9 A. M., when the psychrometer had also become equal to the temperature of the air.

The daily variations of the barometer, also at heights of 17,500 feet bar. 385 millimeters, had still the same form as at lesser elevations, showing particularly a decided minimum near 4 P. M. The difference between the daily extremes reached then only 2.5° millimeters. Also at lower elevations, such as 11,000 to 12,000 feet, we found the variation of the barometer very small: at Leh, the difference between the two greatest extremes observed in *three months*, was only five millimeters.

Vegetation, Animals.

The number of species of plants, as well as the number of individuals, is exceedingly limited on the higher parts of the Kuenluen. Lichens are completely wanting in the dry angular gravel covering the high plateau and slopes of the mountains in their neighbourhood; they are only to be found among the moraines, which are generally moister. More surprising still is the abundance of vegetation, particularly of grass on the most northern slopes descending to the valley of the Yarkand and its northern tributaries. But even there, the number of species is smaller than at first sight we were led to expect. The increase of vegetation seems to coincide with the increase of rain mentioned above.

Birds, even birds of prey, are exceedingly scarce in the central parts. Quadrupeds are much more numerous. We found wild yâks, the existence of which in the wild state has been doubted, Kiangs, five or six species of wild sheep and goats, hares and mice, as high as 16,000 to 17,000 feet. Their number as well as the variety of species is remarkably great when compared with the great scarcity of vegetation.

Report on the Progress of the Magnetic Survey of India, and the Researches connected with it, from May to November, 1856.—*By* M. ADOLPHE SCHLAGINTWEIT.

ROUTE.

I left Simla on the 28th of May, proceeding through Kulu and Lahoul to Zanskar in Thibet (arrived 26th June). I was chiefly occupied with the examination of the western parts of Thibet, and of a considerable part of the Kuenluen range to the northward of Thibet.

I arrived at Khabbulu on the 21st July, and penetrated by a transverse valley from Khabbulu and Shigar up to the water-shed of the Kuenluen range. The most northern point reached was the Mustak Pass (20th August, 18,800 Eng. feet). The predatory habits of the wild Mahomedan tribes of Hunze, which infest the country on the other side of the Mustak, prevented my proceeding further on in this direction in the Kuenluen range. I had the opportunity of reaching, on the 29th of July, on the Chorkonda peak, an elevation of nearly 19,500 Eng. feet (calculated approximately from Ladakh) and made a series of physical experiments during the ascent.

I arrived at Iscardo on the 1st of September, after an examination of the elevated mountain groups near the point where the great southern bend of the Indus takes place. I arrived at Kashmeer on the 9th of October, and left on the 2nd of November for Murree and Rawul Pindee, (arrived 17th November). According to the plan of our operations sanctioned by Government, during the present cold season a part of the Punjab and of Scinde will be examined.

To obtain geological and meteorological observations for a part of the Himalaya, which we could not visit ourselves, my draftsman, Eleazar Daniel, and Mr. Monteiro, attached to my brother Hermann's establishment, with some geological and plant collectors, were sent through the outer ranges of the Himalaya from Simla, viâ Kangra and Noorpoor to Kashmeer.

Their barometric and meteorological observations carried on regularly at Kangra, Noorpoor, Jummoo and Kashmeer, will be of much value for the calculation of our own barometric observations.

Magnetic Observations.

Magnetic Observations were made by me at the following stations:—

Simla.
Sultanpore.
Kardong in Lahoul.
Zanskar.
Dah.
Huche,
Camp on the upper part of Chorkonda glacier 15,800,
Chutron,
Camp at the foot of the Mustak Pass,
Iscardo,

} These stations are situated on the northern side of the Indus in the Kuenluen range.

Astor,
Guryhs,
Kashmeer, where a continuous and regular series of hourly observations were taken.
Murree,
Rawul Pindee continued hourly observations.

I also subjoin a list of the magnetic Stations made during the same period by my brothers, Hermann Schlagintweit and Robert Schlagintweit:—

Simla,
Rampoor in Bissahir,
Mood in Spiti,
Korzok on the Tso Moriri Lake,
Pangkong Lake,
Ladakh, (Leh) regular series of hourly observations for two months (See Report of Hermann Schlagintweit and Robert Schlagintweit, p. 116.)
Sassar Pass,
Karakorum Pass,
Sumgal, in Turkistan,
Suget, in ditto,
Kargyl,
Dras,

Kashmeer,
Murree,
Mozufferabad,
Rawul Pindee.

The following gives the magnetic dip ascertained at some of the more important stations,

Camp at the foot of the Mustak,	50°	2′
Chorkonda glacier,	48	40
Astor,	48	23
Iscardo,	48	20½
Guryhs,	47	37½
Kashmeer,	46	55
Murree,	46	11
Padum,	45	24
Sultanpoor,	43	54½

Some of the principal Stations made by Mr. Hermann Schlagintweit and Mr. Robert Schlagintweit, are subjoined for comparison:—

Suget in Turkistan,	50°	4′
Sumgal in do.,	50	1
Karakorum Pass,	49	8
Sassar Pass,	48	11
Ladakh, (Leh,)	46	54
Kargyl,	48	10
Dras,	46	58
Mozufferabad,	47	2

These observations, as well as the observations given in our former reports, show that the increase of the dip or inclination of the magnetic needle compared to the latitude, is very rapid in India and in the mountain system of High Asia.

The declination of the magnetic needle is constantly to the eastward in the whole of the western Himalayas, Thibet and the Kuenluen mountains.

The easterly declination is every where pretty considerable, being for instance—

2° 44′ to the east in Leh.
2 12 ..... Suget.

and still very nearly 2° to the east in Astor, which place was the most westerly of our stations.

It seems to be quite evident that the lines of the magnetic declination undergo a sensible irregularity in the mountain systems of High Asia (comprising the Himalaya, Thibet and the Kuenluen) that is to say, the declination in these mountains in the same longitude is more to the eastward, than it is in the same longitude in the Indian Peninsula.

Meteorology.

The barometrical and meteorological observations have been daily carried on regularly as before. I may be permitted to mention a few of the results.

1. The barometric observations made at several elevated and isolated stations (between 16,000 and 18,000 Eng. feet) hourly for one or several days, have shown that the diurnal barometric variation at great heights in the Himalayas, is similar to that in the plains; the minimum pressure takes place between 3 and 5 P. M.

The difference between the maximum and minimum, however, is constantly very small and considerably less than it is in places of less elevation above the sea.

2. The diurnal variation of the barometer in the mountain systems of High Asia is therefore different from the barometric variation at elevated peaks of the Alps of Europe where the maximum pressure takes place in the early hours of the afternoon.

The summer heat in the valleys of Balti, elevated only from 7,000 to 8,000 Eng. feet, is very considerable. I observed from the 1st to the 20th July, in the valleys of the Indus and Shyok, very generally, the following maxima and minima of temperature; maximum of the day 32° centigrade, minimum of the night 15° to 16° centigrade; average of the day 23° to 24° centigrade.

The decrease of temperature from these heated rocky valleys to the higher peaks is very considerable.

3. The direction of the winds in western Thibet is very much affected by the great local heat produced in the deep rocky valleys; regular morning and evening winds, sometimes very violent, prevail during the summer months in the valleys of the Indus and

Shyok and in the valleys of their larger tributaries, but at greater heights southerly winds prevail as a general rule up to the water-shed of the Kuenluen.

These southerly winds are compensated by northerly winds which have been observed in Turkistan by my brothers, at the same time that I constantly experienced southerly winds on the east of the Kuenluen mountains.

4. The quantity of rain and snow that falls in the western parts of the Kuenluen, in the environs of the Mustak Pass, &c., is considerably more than in the eastern parts of the chain about Karakorum; in consequence the snow line near Mustak (17,900 ft.) is much lower than on the Karakorum mountains (18,600 ft.) determined by my brothers; in consequence also, a great number of large glaciers occur in the western Kuenluen, whilst in the very rainless Karakorum group glaciers of a similar size do not exist.

The greater amount of rain and snow which falls in the western Kuenluen seems especially to be due to the wide opening which exists along the southern parts of the valley of the Indus.

Through this opening the moist winds from the plains of India can penetrate more freely to the high ranges of Mustak than to the Karakorum mountains, where they have to cross the high Himalayan ranges.

The total amount of rain and snow on the western Kuenluen ranges, may be estimated to be about 10 inches a-year; by far the greater part of which is snow-fall in winter. There is very little rain in summer. The total amount of rain and snow in the valleys of the Indus and Shyok is less than in the Kuenluen.

5. Owing especially to the absence of summer rains, and to the dryness of the heated atmosphere produced by the insolated rocky slopes of the valleys, no natural forest of any kind exists in the valleys of western Thibet, though they are only elevated 7,000 to 8,000 Eng. feet above the sea.

At an elevation of 12,000 to 15,000 Eng. feet a rich shrub vegetation of a large species of juniper, of willows and birches is generally met with; below 12,000 feet this shrub vegetation becomes much thinner and disappears almost entirely, owing to the greater heat and dryness.

6. The heat and dryness of summer in Balti, which is so much opposed to the growth of Coniferæ and other forest trees, exercises a very different influence upon the growth of artificially planted fruit trees which are very abundant.

The fruit trees reach in Balti to a much greater elevation than in the Himalaya; the upper limits (of the walnut for instance) in Balti and the Kuenluen is 11,000 feet, whilst in the Himalaya, it is only 9,000: the apricots (a characteristic tree for the Balti valleys,) which are nearly unknown in the Himalaya, reach 10,000 to 10,500 ft. Apples and grapes show a difference still greater than in the case of the walnuts. The cause of it is, that in the Himalaya the summer rains tend to lower the summer temperature in the higher valleys owing especially to the cloudy state of the atmosphere.

In the upper Himalayan valleys, the summer rains just set in at a time when these fruit trees are still in flower or beginning to form the fruit.

7. The observations of the *temperature of the ground* at various depths mentioned in our former Reports were carried on at many stations, both by my brothers, and by myself.

The following are the temperatures of the ground observed at one meter, (3 feet 3 inches) below the surface at some of the principal places.

The thermometers were buried in a level open ground which was freely exposed to the rays of the sun.

Stations, &c.	*Temperature at* 1 *meter* (3 *feet* 3 *inches*) *below the surface.*
Sultanpore, 5th to 7th June,	24.5°
Kohsar, 8th to 9th June, (12,000)	9.4
Kardong, 10th to 14th June, (12,000)	9.6
Padum, 24th to 27th June, (12,000)	9.7
Dah, 5th and 6th July, (9,700)	18.3
Chorkonda, 21st and 22nd July, (12,000)	14.2
Shigar, 4th and 5th August, (8,200)	18.7
Chutron, 8th, 9th and 10th August,	20.0
Isoha, Camp near Mustak glaciers, 19th and 20th August, (17,000)	8.0

Camp near Mustak glacier, 24th, 25th and 26th August, (16,000) 10-1
Astor Fort, 10th and 11th Septr., (7,600) 16-0
Pattere Brock, 13th and 14th, (10,800) 12-3
Ladakh, 11,700 Eng. feet ascertained by my brothers.
„ Average for July, ... 17-6
„ „ August, ... 20-0
„ „ September, ... 19-5
Kashmeer average, for October, for 1 meter, .. 18-5

The numbers in the above table show the very considerable temperature of the ground at 1 meter below the surface in the valleys of the Kuenluen during summer. It is considerably higher than the temperature at equal heights and equal depths below the surface in the Himalaya mountains.

This fact is especially due to the rains in the Himalayas which tend to cool the ground.

In the Kuenluen on the contrary the ground is very dry, and considerably heated by a nearly uninterrupted insolation.

8. The following are the results obtained for the temperature of the ground at great depths below the surface, where the temperature may be assumed to be very nearly stationary. Small wells were dug for the purpose, and the insensible thermometers inserted in the bottom; the hole was filled up entirely and only re-opened after a considerable time.

Ladakh. Ascertained by my brothers 43½ feet below the surface, July, ... 13.4° Cent.
Iscardo,—temperature of several springs at the foot of small hills and at the foot of high banks of alluvial clay, ... 14.4 to 14.6
Kashmeer, 36 Eng. feet, October, ... 17.0

The following were the temperatures observed in the same locality at Kashmeer at different depths below the surface.

At 32 Eng. feet below the surface, ... 17°.2
At 21½ do. do. 17.4
At 6½ feet average for October, ... 18.5
Rawul Pindee, at 47 feet, 9 inches, November, 20.05

Geology.

9. The Kuenluen on the one side and the Himalaya on the other, form evidently only parts of one great system of elevation; Thibet is situated between them; it is an undulating country, with many high mountain ranges which are generally considerably lower than the chains containing the culminating peaks of either the Himalaya or the Kuenluen. Only in some parts, for instance in the lacustrine basin of the Sutlej, Thibet assumes the form of an elevated plain properly so called.

10. The geological structure of the two above mentioned mountain chains is closely allied, even the exterior features of the mountains, in some parts of the Kuenluen about Mustak, are much more similar to those of the Himalayas than might be expected.

11. To the westward, the Himalaya and Kuenluen are separated only by a very narrow belt of mountainous country, 30 to 50 miles broad; it is composed of hornblendic rocks and of a very narrow stripe of fossiliferous paleozoic rocks which are clearly interposed between the elevated felspathic masses, which border them to the north and to the south.

The western termination of the Himalaya may be considered to be at the great southern bend of the Indus.

On the western side of the Indus the Himalaya and Kuenluen cannot be traced as separate chains; they form one mountain mass, the elevation of which decreases very rapidly to the westward.

I had the opportunity of examining a very considerable part of these mountainous ranges from some elevated points in *Astor*, and obtained much information about the topography of the countries of Gilgit, Jassin, Chitroul and Mustak.

Already in Jassin and Chitroul the mountains have lost, to a great extent, their Alpine character; there no longer exist any large glaciers, and the Passes are all lower and many are even passable during winter.

Both in the Himalaya and Kuenluen, the central groups are composed of felspathic crystalline rocks. Many of them show very distinctly the fan-like arrangement of cleavage, which was first observed in the Alps.

In the western Kuenluen, the fan-like structure is exceedingly well developed, the Mustak Pass lies in just about the position, where the cleavage lines run vertically; to the westward of Mustak, the dip is easterly; to the eastward the dip of the cleavage is quite in the *opposite* direction.

13. In the Kuenluen, no *fossiliferous strata* have been met with; the crystalline limestone and gypsum strata which occur in many places form part of the metamorphic micaceous shists, between which they are interposed.

Associated with the gypsum are found in many places hot mineral springs, mostly sulphureous. The hot springs and the gypsum can be traced all along the southern part of the Kuenluen from the origin of the Indus near the Mansarauer Lake to the western Kuenluen around Mustak. We had the opportunity of examining in this range hot springs in more than ten different localities. Some of the springs have a temperature of 90° to 92° centigrade at elevations of 11,000 to 12,000 Eng. feet above the sea; they must be reckoned amongst the hottest springs in the world.

14. The fossiliferous strata which have been described last year in Gnari Khorsum near the origin of the Sutlej, form a pretty continuous band at the northern foot of the Himalaya all along through Western Thibet.

In many places, for instance in Spiti, Zanskar and near Iscardo, fossil remains have been found perfectly identical with the species, collected last year in the more eastern parts of Thibet.

The strata contain fossils from the silurian up to the oolitic group, but no cretaceous fossils, and no nummulites occur on the northern side of the Himalayan water-shed. The fossiliferous strata have been altered in many localities by intrusive greenstones, which sometimes occur in very considerable masses.

15. On the southern side of the main range of the Himalaya, fossiliferous sedimentary strata of great extent are met with.

Already last year, I had the opportunity of pointing out the fact, that the true crystalline felspathic rocks, granite and gneiss, occupy a comparatively small surface in these mountain systems. These rocks form a number of groups of very different size, and in some places, for instance to the northward of Kashmeer, the extent of the

central crystalline rocks is very limited indeed. Large tracts of country in the Himalayas, south of the water-shed, are occupied by sedimentary marine strata, which contain in several places fossil remains. The slate and limestone mountains about Kashmeer yielded a large number of oolitic fossils many identical with those found in Thibet, the same were met with in Kulu and in the mountains near Simla. To the eastward, where as yet no fossils have been discovered, the alteration of the sedimentary strata by intrusive felspathic rocks seems to have been more considerable than at the western end of the chain. To the south of Kashmeer a zone of nummulitic marls and of sandstones of 39 to 50 miles broad borders the Himalaya towards the plains of India.

16. From the observations now collected, it seems that the ocean in the oolitic period extended from the southward across the country where the Himalayas are now situated as far as Thibet. The ocean of the nummulitic period on the contrary no longer extended so far to the northward. It covered a large part of western Asia, of Scinde and the Punjaub, and had its border formed by an elevated range of the then already existing Himalaya.

17. The excavation by the valleys of the eroding power of streams has been carried on to a very great extent—the considerable fall, which rivers like the Indus and Sutlej experience on their course from Thibet down to the low plains of India, has increased their excavating power in a surprising manner.

In the valley of the Indus near Iscardo, in the valley of Astor near the place where the Indus enters the Himalaya, I on several occasions observed gravel, and sand beds evidently deposited by these rivers, and ancient marks produced by the large streams on the rocks at elevations of 3,000 and 4,000 Eng. feet above the present level of the rivers. We have many proofs independent of each other to show the great depth to which all the valleys of the rivers tributary to the Sutlej and Indus have been excavated.

18. In the western Kuenluen very large glaciers from 10 to 15 miles long exist in several valleys. We mentioned last year that in the Himalayas nearly all glaciers show evident marks of being somewhat smaller at present than they were at some former

period; the same fact has been very generally ascertained in the western Himalayas as well as in the Kuenluen.

The decrease of glaciers is comparatively small, but general; no traces of a very large ancient extension of glaciers, like the one supposed by some geologists to have taken place in a general "glacial period" in the Alps, could be found in the mountains of High Asia.

The decrease of glaciers as observed by us must be due to some general change in the climate of the surrounding country, and I think that we have numerous observations to show that this change of climate is due in a great measure to the great excavation of the Thibetan and Himalayan valleys by the action of the rivers.

Many of the valleys of Western Thibet exhibit ancient water marks at 3,000 and 4,000 feet above the present bed of the river. The sides of these rocky valleys, thus gradually excavated, are now heated under the influence of the sun to a much greater extent than was the case formerly; the warm air thus produced, ascends the valleys and tends to melt the ice of the glaciers, near the origin of the valleys, to a greater extent than was the case before the excavation of the valleys had taken place.

Entomological Papers, by* JOHN NIETNER, *Colombo, Ceylon.*

43 *Cyclosomus dyticoides. N.*

C. suborbicularis, depressus, obscure castaneus, elytris piceis fasciis 2 testaceis ornatis, pedibus brunneo—testaceis, tarsis, antennis oreque magis minusve brunneis. Long. Corp. 4½—5 lin; lat. 2½—3 lin.

Antennæ art. 3-11 *depressis.* Thorax transversus antice profunde semilunariter sinuatus; basi quadratus, medio leviter subquadrate emarginatus, elytris parum angustior, ante scutellum subtiliter strigosus; apicem versus sensim angustatus. Elytra basi subquadrata, striata, fasciis 2 (una subhumerali, altera subapicali) transversalibus, interruptis, interstitia 2-8 occupantibus, testaceis ornata.

* Continued from No. VI.—1856, p. 554.

Pedes tibiis apice 2-calcaratis, *calcaribus 2-serratis, tarsis maris 2 anterioribus art.* 1-3 *subtus leviter dupliciterque penicillatis, inter mediis fortiter simpliciterque penicillatis.* Prosternum subhastatum.

In prov. occid. arenis peraridis Amararum more victitat.

To judge from what Lacordaire says of this g. in his gen. des col. (a work which, as I have said elsewhere, I look upon as containing the essence of all former researches) it would appear that the present species differs very materially from the three others hitherto described, namely in the flatness of the antennal joints, in the serrated edges of the tibial spurs, in the existence of the tarsal brushes in the male and in the colour—to say nothing of some other minor distinctions. The three first of these peculiarities (too important not to have been noticed by Lacordaire or any other describer of the g. had they been aware of them) add considerably to the characteristics which already constitute this g. one of the most remarkable of the extensive family of the Carabidæ, whilst through the colour of the present species it becomes still more closely and more strikingly allied to certain Dyticidæ (Hydaticus) than has hitherto been the case.

The prevailing colour of the insect is deep chestnut, lighter along the sides of the thorax, the elytra darker. The latter are variegated with 2 transverse belts of irregular outline and interrupted in the middle near the suture; one of these is subhumeral, the other subapical; they are of yellowish colour and reach from the first to the eighth stria, a small discoloured spot being projected from the subhumeral belt on either side to the ninth stria and a discoloured prolongation of the other filling the apical angles, with the exception of a dark spot; the margin is also of a more or less brownish colour. The legs are dark yellowish with chestnut tarsi; the mouth and antennæ are brown, the latter light at the base. These colours vary altogether from lighter to darker. The head is of the typical sculpture, it has 2 impressions at the posterior margin of the clypeus and is finely sulcated between the eyes. The antennæ are strong, stiff and short reaching hardly beyond the base of the thorax, joint 1 is of middling size, 2 short, 3, 4 are subequal 5 rather shorter, 6-11 still shorter, subequal, joints 3-11 *are strongly compressed and pubescent, but only on the narrow side.* The labrum is deeply subtriangularly emarginated in front and increases in breadth towards its base. The

maxillæ are furnished with a thick brush at the apex much of the rough appearance of a minute bundle of coir. The inner edge of the lobes of the mentum is very broadly cut away. The ligula appears, what I understand it to be from Lacordaire's description, coriaceous, of middling size, of the shape of an oblong square, depressed in front and at the sides, set in its membranous and ample paraglossæ as in a broad frame; the whole obliquely truncated at the anterior angles, and ciliated along the anterior margin. The palpi can hardly be said to be truncated at the apex of the 4th joint, finishing off rather like an acorn. The remaining parts of the mouth and the head in general are of typical construction. The thorax is strongly transverse, subquadratic at the base and firmly applied to the elytra but not quite as large. The latter being also subquadratic at the base, the place of the juncture of these two parts of the body presents, upon close inspection, rather a peculiar appearance. The thorax is gently narrowed towards the apex, the anterior part is deeply emarginated in the shape of a crescent, the posterior part slightly so at the middle, the emargination being long, shallow and nearly rectangular, its external corners fitting into two deep notches in the base of the elytra. The anterior angles are rather acuminated. The back is elevated and divided by a longitudinal line, it has 2 impressions at the base and is finely sulcated just in front of the scutellum. The elytra are furrowed and irregularly impressed with deep punctures along the 9th ridge, they are slightly dehiscent at the apex. *The legs of the male* are of the following description: strong coxæ, trochanters and femora simple, the latter slightly setose, the anterior tibiæ strongly dilated towards the apex and costated, strongly spinoso-dentate at the outer edge, with a strong, blunt spur at the notch and another at the apex, the latter place, moreover, furnished with spines. The intermediate and posterior tibiæ with 3 rows of spines along the outer and 2 rows of strong bristles at the inner side—all inserted on ridges, strongly 2-calcarated at the apex, the inner spur longer than the outer one. *These apical spurs of the tibiæ are in all the legs slightly compressed and serrated on the 2 narrow sides.* The anterior tarsi have joints 1-4 slightly dilated, *the apex of the first and the 2nd and 3rd being at the same time furnished each with 2 small white brushes below fenced in by spines.* Joint 1 is

triangular with the external apical angle strongly prolonged, 2 and 3 are almost equal, transversely ovato—subcordiform, 2 slightly but distinctly prolonged at the external apical angle, 3 less so, but still prolonged, 4 small, cordiform, 5 long subcylindric, joints 1-4 with 2 spines at the apical angles, these spines removed in the 5th the one to a subapical and the other to a position at the middle; in joints 1-3 these spines are shorter and thicker at the outer angle than at the inner, in the 4th this difference is scarcely observable and in the last it does not exist; the claws are strong and simple. The intermediate tarsi are elongated, joint 1 triangular, 2 and 3 nearly equal, quadrato—subcordiform, 4 of a similar form but much smaller —all furnished with spines at the apical angles in the manner of the anterior tarsi. *The inner side of the apical half of joint* 1 *and joints* 2 *and* 3 *with strong brushes of reddish colour bordered by rows of spines, the entire lower surface forming one thick brush and not two as in the first pair.* The posterior tarsi are still more elongated, joints 1-4 decreasing gradually in size, subcylindric, 5 quite so, all armed like the preceding. *The legs of the female* are very similar to those of the male, still there is some difference in the tarsi: the brushes are wanting, the anterior pair has joints 1-3 fully as much and 4 more dilated, joints 2-4 are subcordiform, 2-3 rather more prolonged on the outer side than in the male. In the intermediate pair the joints are more distinctly triangular. The prosternum is elliptic, pointed at the apex, or of the shape of a spearhead with the lateral angles rounded off, it is depressed at the sides, strongly marginated (as is also the anterior part of the mesothorax) being furnished with a few thin hairs within the margin. The size of the individuals is no criterion as to their sex, sometimes the female sometimes the male being the largest.

Regarding the habits of these insects one would feel inclined to suspect them to be of a semiaquatic nature, that is the insects to frequent the banks of rivers or other damp places—however, the direct contrary is the case: *they live in the driest, hottest and sandiest places that can be found, where they burrow in the sand exactly in the manner of the well known g. of the Amaras.* In the course of 6 years I have taken but 2 of these interesting insects, both in the neighbourhood of Negombo, the one in the Cinnamon

gardens there, the other flying on my table at night. Of late, however, I have been more fortunate taking considerable numbers of them in the Cinnamon gardens of Colombo in holes, made by the rooting up of weeds, into which they had run and could not escape, the loose sand giving way under them whenever they attempted to do so. When wishing to find them I had to search the corners of these holes, where some leaves had usually collected, when I have sometimes dug up eight at a time, frequently rather deep in the sand. They are quick of motion and being thus pursued immediately bury themselves in the sand.

On reconsidering the peculiarities which so effectually distinguish this species from the 3 others known, and which I have thought it not superfluous to set forth at such length, I am doubtful whether there is not ample reason for forming it into a new g. unless indeed the other species were very imperfectly known and described, which latter I almost suspect with regard to the foot-brushes of the male. If, however, otherwise the diagnosis as given by Lacordaire requires at all events to be entirely recast and the g. to be removed from the tribe Cratoceridæ, (one of the characteristics of which is the want of foot-brushes in the male) in which he has placed it; and, this being agreed to, I would, taking all its peculiarities into consideration, propose to carry out Lacordaire's idea and to form it into a new tribe "Cyclosomidæ" to which it appears as much entitled as the g. Omophron.

Trib. Bembidiidæ.

Ochthephilus. n. g. N.

Corpus oblongum, subparallelum, valde depressum. Caput magnum antice trigonum; oculis magnis, ovatis, prominulis; collo forti. Mentum subquadrate emarginatum, lobis extus fortiter rotundatis, apice abrupte acuminatis, dente parvo acuminato. Ligula parva apice quadrate truncata, libera, paraglossis setiformibus marginem anteriorem longe superantibus. Palpi robusti art. 4° elongato, tenui, acuminato; maxillares art. 3° interne—, 2° externe incrassato; labiales art. 3° robusto externe incrassato, 2° parvo, cylindrico. Labrum parvum subtrigonum, antice emarginatum. Mandibulæ, elongatæ, rectæ, trigonæ, apice arcuatæ,

infra medium pluries dentatæ. Antennæ robustæ corporis med. fere attingentes, art. 1° et 11° mediocribus, subæqualibus, 2-4 et 5-10 inter se subæqualibus, illis subcylindricis, his ovatis. Thorax subcordatus basi quadratus. Pedunculus brevis. Elytra, apice rotundata. Pedes omnes simplices, subæquales, anteriores tibiis profunde excavatis, tarsis leviter contractis, art. 1-4 gradatim minoribus, art. 1° subcylindrico, 2-4 subtrigonis, 5° sat magno, unguibus simplicibus.

44. *Ochthephilus Ceylanicus. N.*

O. brunneo-testaceus, pedibus palpisque testaceis, tenuiter pubescens; fronte profunde 2-sulcata; elytris obsolete striatis, in striis punctatis; long corp. 1⅓ lin.

In fluminum ripis Bembidiorum more victitat.

This interesting little beetle might at first sight be mistaken for a Læmophlœus, of which it has the size, depressed form and colour, the prominent eyes, however, and cordate thorax—to say nothing of its habitat—remind one very soon of its real connexions. I do not think there can be any doubt that this insect forms a new and interesting addition to the Bembidiidæ. In fact the question whether it belongs to this tribe or not, depends, in my opinion, mainly upon the inferences drawn from the structure of the terminal joint of the palpi. It is true that this joint attains in Ochthephilus a degree of development unequalled amongst the Bembidiidæ; as, however, this development is not confined to the one particular joint alluded to, but affects the entire organ of which it forms a part, it can hardly be said to be a variation of much importance; and as, moreover, the general shape (independently of the elongation) and mode of insertion are the same as in the typical Bembidiidæ I have not hesitated to refer my n. g. to this tribe.

The head is as broad as the thorax and altogether of about the same size, it is strongly triangular from the eyes to the tip of the mandibles, the forehead is impressed with 2 deep longitudinal furrows, the eyes are large, rather oval and prominent, behind them the head is abruptly contracted into a thick neck. The antennæ are long and thick reaching nearly to the middle of the

body, joints 1 and 11, 2 4 5-10 are subequal amongst themselves, 5-11 oval, 1-4 subcylindric. The labrum is small, rather triangular being narrowed at its base, it is emarginated in front with a slight angle in the middle of the emargination. The mandibles are long, straight, triangular, bent at the tip only, dentated below the middle, the one more so than the other. The maxillæ are thin and slender, gently bent outwards at the base and inwards at the apex, the outer lobe corresponding with the inner one in shape and strength. The palpi are robust, both the maxillary and labial ones have joint 4 elongated, thin and acuminated, in fact needle-shaped, firmly implanted in the preceding one, not loosely hinged to it. The maxillary ones have joints 3 and 2 robust, the former swollen on the inner, the latter on the outer side. In the labial ones joint 3 is still plumper than in the others, but differs in shape by being incrassated on the outer instead of the inner side, the 2nd joint being at the same time quite small and cylindric. The mentum is large and simple as above described. The ligula is small, oblong, very slightly narrowed and transversely cut away at the apex; the paraglossæ separate from its sides a little below the anterior corners; they are setiform and reach much beyond it. The whole organ is of membranaceous texture having, however, a more substantial centre or back. The thorax and elytra are simple and sufficiently described above. I may add that the former is divided by a longitudinal furrow and that both are furnished with a narrow margin at the sides. The scutellum is very small and the abdomen furnished with a short peduncle. The legs are weak, simple and nearly equal, the anterior tibiæ are deeply notched, the lower margin of the fourth tarsal joint of the same pair is furnished with a long thin spine the apex of which fits in between the claws. I have been unable to discover any footbrushes or other sexual distinctions in the specimens before me, but it is not improbable that the tarsal spine just mentioned occurs only in one sex.

The habits of the insect are those of the Bembidia, in whose society it lives upon the banks of rivers, like them taking readily to its wings. I have found it occasionally in considerable numbers upon the sandy banks of the Maha Oya in the neighbourhood of Negombo, close to the edge of the water.

Trib. Lebiidæ vel Pericalidæ.

Creagris. n. g. N.

Corpus oblongum valde depressum. Caput magnum robustum; oculis mediocribus, ovatis, sat prominulis; collo brevi. Mentum forma ferri equini vel trifurcatum (hinc n. g. Creagris) lobis angustis, subparallelis, inter med. et apic. leviter dilatatis, apice oblique truncatis, dente lobis parum breviore, tenui, acutissimo. Ligula magna cornea, infra apicem leviter constricta, angulis anticis rotundatis paraglossis connatis, apicem non attingentibus. Palpi maxill. art. 4° claviformi, apice fortiter truncato; labiales art. 4° subelliptico, truncato. Labrum maximum, suborbiculatum, convexum. Mandibulæ parvæ, basi obsolete unidentatæ, labro obtectæ. Antennæ robustæ humeros attingentes, art. 1, 3 et 11 longitudine fere subæquali, mediocribus, 2° parvo, rotundato, 4-10 subæqualibus, cum 11° ovatis. Thorax parvus capite sesqui minor, transversus longitudine duplo fere latior, infra med. fortius angustatus, basi parum prolongatus. Pedunculus brevis. Elytra apicem versus leviter dilatata, apice fortiter subquadrate truncata. Pedes robusti simplices, subæquales, ant. tibiis profunde excavatis, omnes tarsis brevibus art. 1° sequentium 2 fere longitudine, subcylindrico, 2 3 gradatim minoribus, magis minusve triangularibus, 4° magno, profunde bilobo, 5° mediocri, unguibus simplicibus, art. 4° subtus dense penicillato.

45. *Creagris labrosa. N.*

C. picea, ore antennisque, coxis, trochanteribus femorum tibiarumque apice et tarsis brunneis; dense punctata obsoleteque pubescens; elytris striatis; long. corp. $4\frac{1}{2}$ lin.

Specimen singulum prope Colombo nocte ad lumen cepi.

I consider this scarce and interesting insect to form a passage between the Lebiidæ and Pericalidæ, but am doubtful to which of these two tribes to refer it, as, although it partakes of the characteristics of either, it is at the same time distinct from either. Distinguished in several respects, its most extraordinary character lies in the curious shape of the mentum. This is, however, easily described as large, of the shape of a *horseshoe* with a long, thin, very pointed tooth in the middle, the apical half of the sides (lobes)

being at the same time gently dilated, the apex itself being obliquely cut away from the outer towards the inner side (the inner angle being the most advanced) and slightly dentated at the edge thus formed. Or it may also be described as *a fork* with the outer teeth somewhat enlarged, truncated at the apex and so forth. As far as I know, this variation from the usual form of the mentum is repeated in no other Carabideous insect. The other parts of the mouth have not much to distinguish them with the exception, however, of the labrum, which attains a very extraordinary degree of development, occupying *rather more than one third of the whole head, although the latter itself is large and heavy.* It is of a suborbicular shape, very slightly produced in front into an obtuse angle, it is vaulted, covers the mandibles, has two longitudinal impressions at the sides of the base and is highly polished. The head has 2 impressions in front of the eyes, is densely punctured and thinly pubescent, it is strongly but gradually contracted behind the eyes and formed into a short neck. The antennæ are strong and reach to the shoulders, joints 1 3 and 11 are of about equal length, middling, the former two subcylindric, joint 2 is small, rounded, 4-10 subequal and with the 11th oval. The thorax is small only half as large as the head, rather narrowed, strongly transverse, twice as broad as long, slightly emarginated in front, the anterior angles rounded, contracted below the middle, subquadratic and prolonged at the base, posterior angles depressed, longitudinally divided by a deep furrow. The elytra are striated and, like the thorax, densely punctured and thinly pubescent. The legs are strong, simple and subequal, the anterior tibiæ are deeply notched, the first joint of the tarsi is as long as the two succeeding ones together, subcylindric, the 2nd triangular, the 3rd of a similar but more transverse form, smaller—all three have the apical angles accuminated, the 4th is large and deeply bilobed, the 5th middling, thin, the claws simple. The tarsi are altogether short and strong, the first joint is furnished with longer, the 2nd and 3rd with shorter stiff hair, whilst the 4th is strongly penicillated below. The anterior tibiæ are slightly spinose, the others more so.

I believe the only specimen of this insect which has hitherto come into my possession, and which has served as a type for the above description, to be a female.

Trib. Galeritidæ.

Heteroglossa. n. g. N.

Corpus oblongum, subparallelum, depressum tenuiter hirsutum. Caput mediocre oculis semiglobosis, sat prominulis; collo brevi. Mentum sat profunde subquadrate emarginatum, lobis magnis extus fortiter rotundatis, apice abrupte acuminatis, dente magno excavato, apice inflecto obtuso, magis minusve profunde sinuato. Ligula subcornea apice libera, truncata, vel quadrata vel obconica vel leviter bisinuata; paraglossis cylindricis, marginem anteriorem longissime superantibus, magis minusve arcuatis. Palpi hirsuti art. ultimo sat elongato, subcylindrico, apice truncato vel subtrigono. Labrum transversum antice emarginatum. Mandibulæ validæ, trigonæ, apice arcuatæ basi pluries dentatæ. Antennæ robustæ corporis med. attingentes, art. 1° incrassato sequentibus 2 longiore, 2° parvo, 3-11 subæqualibus. Thorax subcordatus, basi transversim truncatus leviterque prolongatus. Pedunculis brevis. Elytra apice fortiter subquadrate truncata, costata, costis 16 majoribus, in interstitiis subtilissime bicostulata, in sulcis (sulco e tribus inter costas binas majores medio excepto) tenuiter pilosa, in omnibus transversim rugulosa. Pedes anteriores tibiis sat fortiter emarginatis, tarsis maris art. 1-3 leviter dilatatis, subtus squamularum seriebus 2 munitis, art. 1° elongato-trigono, 2-3 rotundato-trigonis, 3° præcedente parum minore, 4° parvo cordato 3° plus sesqui minore, his omnibus angulis acuminatis, 5° magno, unguibus simplicibus.

This diagnosis may appear somewhat vague, still I have been unable to express the characteristics of the insects from which it is drawn in more precise terms, although they have features quite peculiar to themselves by which they are easily recognised when once seen.

The points on which the 3 spec. which form this g. more or less disagree are the following: (1) the labrum: this is more transverse in *H. elegans* and less deeply emarginated in *H. ruficollis* than in the other 2 spec. respectively—still in all 3 it is *emarginated* and has, moreover, the peculiarity of being furnished with bristles at the 2 anterior corners. (2) the mentum: this is subquadratically emarginated, the lobes being strongly rounded on the outer side, and abruptly acuminated at the apex, at the base of the emargination

it is furnished with a broad, excavated tooth which is inflected and obtuse at the apex—so far all three species agree—however, whilst in *H. elegans* and *ruficollis*, this tooth is slightly emarginated at the apex, it is sharply notched in *H. bimaculata*, in fact bilobed, the lobes being large and rounded at the apex. I look upon this notch, which is sharp but not deep, as a mere variation from the emargination existing at the apex of the tooth of the former 2 species. (3) the palpi: these, the labial as well as maxillary, have their terminal joint truncated at the apex—and so far again all 3 species agree—however, whilst this joint is of elliptic form in the palpi of *H. ruficollis*, it is in *H. elegans* only so in the labial ones that of the maxillary ones being cylindric at the base. In *H. bimaculata* finally this joint is rather club-shaped or subtriangular and more strongly truncated than in the former 2 species. (4) the ligula: this organ is of subcoriaceous texture, middling size, the shape of an oblong square, free and transversely truncated at the apex—these characters are common to all 3 spec. and in *H. ruficollis* I have nothing to add to it; however, the anterior margin, which is straight in this species, is slightly bisinuated in *H. elegans* the outer angles being acute and the central one obtuse. The ligula of *H. bimaculata* differs from both the former in as far as it is narrowed towards the apex and depressed towards the sides and the front, the anterior margin is otherwise cut away straight, without any sinuosities, but it is rather strongly armed with bristles. The paraglossæ agree in all 3 spec. in as far as they are highly developed, reach much beyond the anterior margin of the ligula and are more or less bent inwards. Their greatest development they assume in *H. elegans* in which they nearly touch each other in front of the anterior margin, being cylindric and slender at the same time. In *H. ruficollis* the paraglossæ are somewhat shorter and straighter and in *H. bimaculata* still more so.

On all other points the 3 spec. perfectly agree, in saying which I lay particular weight upon the unusual sculpture of the elytra and the rather peculiar hairy vesture of the insects, bearing also in mind their general appearance, proportions, system of coloration, mode of living, etc. As to the hairy vesture of certain parts of the body and the sculpture of the elytra, it is true that these are not

generally looked upon as of much importance; however, they appear to me so in this instance, as they present certain unusual variations repeated in all 3 species. The hairy vesture consists in thin yellowish or reddish hairs thinly seminated over the back and still more thinly over the whole of the lower surface of the insects, being at the same time longer at the latter place. This vesture acquires its greatest density on the legs, especially the tibiæ and tarsi, whilst its uniform presence at the palpi forms almost a generic character. The elytra are exquisitely sculptured into about 8 larger costæ on either of them and into 2 smaller ones between every 2 of these; the furrows thus formed are finely transversely rugose and (with the exception of the central furrow between every 2 larger costæ) thinly pubescent.

It just strikes me that this sculpture of the elytra may occur in other Galeritidæ. If so, the insufficiency of my means to ascertain this fact to a certainty must plead my excuse for attaching undue importance to it. However, I should in this event consider my books of reference, none of which say anything to that effect, greatly (and indeed more than myself) at fault for not alluding to it, as in my opinion it is sufficiently peculiar to be mentioned.

After this lengthy preamble I shall have but a few words to say in finishing the description of the species.

46. *Heteroglossa elegans. N.*

H. supra rufo-castanea, capite obscuriore, maculis 2 humeralibus obsoletissimis ferrugineis; subtus dilutior, pedibus antennis oreque subtestaceis, elytris ad angulos apical. extern. testaceis; long. corp. 3½ lin.

In lacus Colombensis ripis sub vegetab. putrescent. non infrequenter cepi.

An agile, pretty little insect of chocolate colour, and with its family features about it. Head smooth, polished, above and below slightly punctured, with 2 impressions in front of the eyes, anterior angles of labrum rather accuminated. Thorax deeper and more densely punctured than the head and with the elytra thinly hirsute, rather strongly emarginated in front, less so behind; sides, especially at the basal angles, depressed, divided longitudinally by a deep furrow.

Scutellum-like thorax punctured and hairy. Elytra with the inner apical angle right angled and the outer rounded off largely punctured within the margin especially near the apex. Tibiæ with a row of larger spines down the outer and a row of smaller ones down the inner side, 4-calcarata at the apex, the 2 inner spurs larger.

47. *Heteroglossa ruficollis. N.*

H. colore præcedentis sed obscurior, thorace pectoreque rufo-testaceis, antennis art. 3 primis nigrescentibus; long. corp. 4½ lin.

Cum præcedente sed rarius et per occasionem nocte ad lumen cepi.

The shape of the body is quite that of the former but the insect is larger. The head is less distinctly punctured than in the former and there is an additional impression in the middle of the forehead The thorax is also less deeply punctured, but the divisional furrow is more so than in the preceding species. The anterior tibiæ appear somewhat less deeply notched. There is nothing else to add to the description that has not been pointed out already.

48. *Heteroglossa bimaculata. N.*

H. subcastanea, thorace capiteque rufo-testaceis, elytris medio maculis 2 flavis pictis, pedibus abdominisque apice testaceis; long. corp. 5½ lin.

Ubi præcedentes infrequentissime legi.

Head, with the exception of the forehead, deeply punctured, with 2 impressions in front of the eyes, anterior angles of labrum rounded. Thorax densely and deeply punctured, with elytra thinly pubescent. The latter with a round yellow spot at the middle of either.

Trib. Cratocerice.

Oosoma. n. g. N.

Corpus ovatum subconvexum, glabrum. Caput transversim suborbiculare, robustum; oculis magnis, ovatis, parum prominulis. Mentum profunde emarginatum, lobis extus rotundatis, apice subobtusis, dente minimo, obtuso. Ligula submembranacea minima, angustata, paraglossis maximis, connatis, ligulam totam amplec-

tentibus, apice leviter sed abrupte et sat profunde emarginatis. Palpi art. ult. ovato apice abruptius angustato leviterque truncato. Clypeus subsemilunariter emarginatus. Labrum transversum profundius angulate emarginatum, angulis anter. rotundatis, lateribus angulato-rotundatum. Mandibulæ parvæ, validæ, edentatæ, inter med. et apic. arcuatæ. Antennæ robustæ, thoracis med. parum superantibus, art. 1 et 11 subæqualibus, 2-10 parum brevioribus, subæqualibus, 1-3 basi angustatis, reliquis ovatis, 5-11 leviter depressis. Thorax transversus, capite parum latior, basi quadratus, apicem versus leviter angustatus, antice vix emarginatus, postice leviter bisinuatus, elytris fortiter applicatus. Elytra basi quadrata, thoracis latitudine, apice oblique subtruncata, striata. Pedes validi fortiterque armati, subæquales; tibiis costatis, ant. sat profunde emarginatis, apicem versus dilatatis, 4 post apice 4-calcaratis; tarsis art. 1-4 gradatim minoribus, ant. leviter dilatatis, art. 1° cylindrico-trigono, 2-4 trigonis, post. art. 1-4 subtus longitudinaliter biserratis.

Interesting insects apparently nearly allied to *Nothopus*, of an appearance which easily distinguishes them from any other Carabidæ I have hitherto met with in this Island: the head is plump, transversely orbicular, immersed up to the eyes in the thorax. The clypeus is narrow, transverse, rather deeply emarginated in the form of a crescent, ant. angles acuminated. The labrum is of thin, translucent texture, deeply angularly emarginated in front, the ant. angles rounded, setose, sides angular, rounded. Mandibles short and thick, curved from the middle to the tip, edentate. Maxillæ simple. Antennæ short, thick, reaching a little beyond the middle of the thorax, joints 3-11 pubescent, 5-11 slightly compressed, 1-3 narrowed at the base, 4-11 oval, 1 and 11, 2-10 of about equal length respectively. Mentum with a straight, deep emargination, lobes rounded externally, rather obtuse at the apex, tooth very small, obtuse. Ligula very small, narrow, slightly dilated towards and rounded at the apex, paraglossæ very large, connate, enveloping the ligula on all sides, the whole slightly truncated at the ant. angles and slightly, but sharply and pretty deeply emarginated or notched at the centre of the ant. margin. Palpi, both maxill. and labial ones, with the terminal joint oval,

rather abruptly narrowed and slightly truncated at the apex; these characteristics more distinctly expressed in the labial ones. All the lower part of the mouth is situated in or forms a cavity. Thorax a little broader than the head nearly twice as broad as it is long, quadratic at the base, slightly narrowed towards the apex, ant. angles slightly produced, the ant. margin can hardly be called emarginated, 2 slight sinuosities at the base, firmly applied to the elytra and as broad as these. Scutellum broad, triangular. The elytra rather abruptly cut away at the apex, internal angles rather obtuse, slightly dehiscent. Legs stout and strongly armed, very much in the manner of my *Cyclosomus Dyticoides*, of which the insect under consideration in various respects reminds me most forcibly. The spines of the tibiæ are inserted on ridges, the ant. ones being dilated. The tarsi are all concave on the inner side. I have been unable to discover anything in them by which to distinguish the sexes, not even additional spines or bristles. However, the sexes appear well marked by the difference in size. The ant. tarsi are dilated, the intermed. and post. ones more and more elongated and the joints subcylindric; joint 1 of the latter is longer than the 3 following together, all 4 have the edges of their concave inner side serrated—an extraordinary circumstance. The highly developed prosternum reminds me again of *Cyclosomus*.

The habits of these insects are those of the *Amaras;* they live in dry, sandy places under grass and leaves; at certain times they take freely to their wings and *O. arenaria* may then be caught in great numbers at night about the light. This species is very common in all the dry and sandy parts of the neighbourhood of Colombo; the pretty little *O. Gerstæckeri*, however, is scarce.

49. *Oosoma arenaria. N.*

O. supra brunneo-ænea, subtus magis minusve brunnea, pedibus, palpis antennarumque basi testaceis, tarsis, labro limboque angustissimo obscurioribus; capite ad clypei marginem post. punctis 2-impresso; thorace ad basin obsoletissime 4-foveolato, linea longitud. abbreviata, indistincta, diviso, basi anticeque obsoletissime striguloso; subtus tenuiter hirsuta; long. corp. 2½—3 lin., lat. 1¼—1½ lin.

50. *Oosoma Gerstæckeri. N.*

O. supra brunneo-ænea, sæpius glaucescens, elytris dorso dilute brunnescentibus maculis 4 longitud. irregularibus flavis pictis, subtus magis minusve brunnea, pedibus, antennis labroque testaceo-brunneis, palpis antennarumque basi testaceis; long. corp. $2\frac{1}{4}$ lin. lat. $1\frac{1}{3}$ lin.

Excepting in colour not essentially differing from the former. However, the marks of the thorax are more distinct, and the 4 obsolete pits are replaced by 2 longitud. impressions, the whole insect is, moreover, more graceful than the former. The maculæ of the elytra may be said to commence at the basal angles of the thorax which are of a similar, but less distinct, colour. The true humeral maculæ begin at the base of the elytra and stretch nearly to the middle as a thick straight line of narrow parallelogram the principal part of which occupies the 6th interstice a spot being thrown out on either side. The apical maculæ commence a little below the middle and are essentially composed of small squares heaped upon each other so as to form steps or an inverted pyramid.

As this design varies more or less in different individuals it can be of no importance to describe it in a more detailed manner, suffice it to say that apparently in no instance does any part of it reach either the inner or outer margin, the field upon which it is displayed being enclosed by the 1st and 7th stria. The brownish green metallic upper surface of the insect in some individuals throws off a fine blue reflex, very perceptible on head and thorax. The part of the back enclosed by the maculæ is washed out to a light brown with the exception of the suture which remains dark.

In naming this pretty species after Dr. Gerstæcker of the R. Museum, Berlin, I wished to pay that gentleman the only trifling compliment circumstances admit of in acknowledgment for various useful hints he has kindly communicated to me.

51. *Chlænius princeps. N.*

C. aureo-viridis, scutello cupreo, elytris nigro-viridibus ad basin et infra marginem viridibus, sutura nigra, subtus piceus, coxis trochanteribusque 4 ant. dilutioribus, femoribus trochanteribusque 2 post. testaceis, tibiis tarsisque obscurioribus, ore antennisque

brunneis, labro, mandibulis limboque castaneis; capite obsolete ruguloso, punctulato; antennis art. 3° quarti prope longitudine; menti dente forti laciniis apice rotundatis; thorace ovato-quadrato, latitudine parum longiore, angulis ant. subrectis, post. rotundatis, basi fortiter 2-impresso, punctato; scutello canaliculato; elytris striatis, in striis punctatis, ad strias, præsertim apicem versus, tenuiter pilosis; long. corp. 8 lin., lat. 3 lin.

Specimen singulum f. prope Colombo sub-lapidibus cepi.

A very handsome species, distinguished by its size and comparatively great breadth. The clypeus is impressed with 2 setigerous pits near the ant. corners. The labrum is transverse, slightly situated in front, narrowed at the base and has the ant. angles strongly rounded off. The last joint of both the maxillary and labial palpi is cylindric and truncated at the apex, in the maxill. it is shorter than in the labial ones, in the latter somewhat narrowed at the base and slightly inflated at the middle, both appear slightly compressed at the apex. The elytra are strongly rounded at the apex. The insect has a very strong smell, somewhat like musk, about it.

52. *Chlœnius maleolens. N.*

C. capite, thorace scutelloque obscure cupreo-viridi-glaucescentibus, elytris obscurioribus, pubescentibus, maculis 2 subapicalibus flavis ornatis, subtus piceus, pedibus testaceis, ore antennisque brunneis, mandibulis limboque castaneis; capite ad clypei marginem post. profundius 2 foveolato, punctulato, occipite leviter transversim ruguloso; antennis art. 3° quarto subæquali vel paulo breviore; menti dente apice leviter sinuato; thorace subquadrato, lateribus leviter rotundatis, profundius punctulato atque levissime transversim rugologo, ad basin 2-impresso, parce piloso; elytris densius pubescentibus, striatis, in interstitiis 3-8 utrinque ante apicem macula suborbiculari flava ornatis; long. corp. 6¼ lin.

Specimen singulum m. prope Colombo cepi.

Also a handsome and rare species, smelling strongly and disagreeably of creosote. Head, thorax and scutellum are of a dull bluish green colour with a copper reflex from the back; the elytra

are of a blackish green, pubescent and adorned with 2 yellow spots between the middle and apex; this is of irregular, rounded outline and stretches from the middle of the 3rd interstice across to the 8 stria. The 4th joint of the maxill. palpi is subcylindric, that of the labial ones larger, plump and rather triangular. Tooth of the mentum not bifid but truncated and merely slightly sinuated at the apex. The elytra are narrowed at the apex.

53. *Chlænius Dohrnii. N.*

C. elongatus, parallelus, capite thoraceque viridi-nitentibus, elytris viridi-glaucescentibus maculis 2 apicalibus flavis pictis, subtus dilute piceus, apicem versus brunneus, pedibus testaceis, ore antennisque brunneis; capite sublævi nitidissimo; antennis art. 2° parvo, reliquis longitudine subæquali; palpis maxill. art. 4° cylindrico, lab. eodem subtrigono; thorace ovato-quadrato, crebrius punctato, basi 2-impresso; elytris striatis punctatis, pubescentibus, 2-maculatis, maculis subapicalibus, prolongatis, interstitia 2-8 et angulum apicalem occupantibus, flavis; long. corp. 6 lin. lat. 2 lin.

Specimen singulum f. prope Colombo nocte ad lumen cepi.

The elongated and parallel shape of the body distinguish this species at first sight; it is very pretty and scarce, but has otherwise nothing remarkable in its construction. However, I may add to the above description that the mentum is large, the lobes obtuse at the apex and the tooth but slightly sinuated at the tip. The ligula is of the usual construction, the paraglossæ obtuse and ciliated at the apex. The 2 last joints of the labial palpi are rather elongated, whilst in the maxillary ones they are the reverse; the former have the terminal joint triangular, the latter cylindric, both are strongly truncated at the tip. The head is middling, with 2 impressions in front of the eyes; the mandibles are rather more curved than usual; the labrum is emarginated in front; the antennæ are rather short and stout reaching only to the base of the thorax. The latter is a little broader than the head and of an ovato-quadratic form. The elytra and legs are simple.

I have named this species after the president of the Entomol. Soc. of Stettin to whom I am indebted for much Entom. information.

54. *Harpalus (Ophonus) senilis. N.*

H. oblongo-ovatus, subdepressus, punctato-rugosus, griseo-pubescens, supra æneus, subtus piceus, ore pectoreque dilutioribus, pedibus testaceis, antennis basi palpisque apice flavis; capite robusto antice rotundato, postice parum angustato, thorace vix angustiore; antennis humeros attingentibus art. 2° parvo, reliquis longitudine subæquali; mandibulis obconicis, robustis, una unidentata, altera incisa; labro vix emarginato; palpis art. 4° ovato, apice abruptius angustato, leviter truncato; thorace transverso, longitudine tertia parte latiore, elytris vix angustiore, lateribus rotundato, infra med. leviter angustato, basi subquadrato, hic vix, antice leviter emarginato, angulis apicalibus obtuse acuminatis, basalibus subrecte rotundatis; elytris puncatto-striatis, apice fortius 2-sinuatis et angustatis; tarsis art. 4° cordato; long. corp. 4½ lin. lat. 1½ lin.

Prope Colombo sat copiosus.

This as well as the succeeding two species fly very commonly into the rooms at night during the rainy weather. The present spec. is a fine, comparatively large, robust insect. I may add to the above description that the emargination of the mentum is of middling size, its lobes rounded externally and its tooth just marked in the shape of a slight obtuse rising at the bottom of the emargination. The ligula is very small and narrow, the paraglossæ very large, adhering to it and enveloping it fully and on all sides; the whole is very slightly cut away at the apical angles and slightly, but abruptly and rather deeply, notched at the centre of the anterior margin. I may further notice that some of the individuals before me have the apex of the maxill. palpi prolonged, cylindric and slightly bent inwards; as this is not a sexual distinction and as the insects thus distinguished differ in no other respect from the rest, I look upon them as curious varieties.

55. *Harpalus (Ophonus) rugosus. N.*

H. præcedenti simillimus sed sesqui minor, magis rugosus, antennis robustioribus art. 5-11 ovatis leviter depressis, colore supra parum obscuriore, subtus dilutiore, pedibus albidis, coxis tarsisque brunneis, antennis totis castaneis; long. corp. 3½ lin.

The small size and, upon close inspection, the other peculiarities

just pointed out readily distinguish this species from the former in spite of their close affinity in other respects. They are both equally common about Colombo.

56. *Harpalus (Selenophorus) Colombensis. N.*

H. statura præcedentis sed gracilior, glaber, supra læte æneus, subtus subcastaneus, pedibus albidis, coxis, tarsis, antennis palpisque testaceis, ore brunneo; capite transversim ruguloso; antennis præcedente tenuioribus, palpis gracilioribus apice magis angustatis; labro basin versus leviter dilatato; mandibulis infra apicem abruptius arcuatæ, una uni; altera bi-dentata; thorace lateribus præcedente minus rotundato, basi minus angustato, hic rugoso-punctato antice leviter longitudinaliter strigoso; elytris striatis, parce punctulatis, in interstitis 3°, 5° et 7° punctis majoribus impressis; long. corp. 3 lin.

Prope Colombo sat copiosus.

A pretty little insect, very distinct from the preceding two. I may add that it also differs somewhat in the paraglossæ the anterior angles of which are distinct.

Trib. Harpalidæ ?

Lepithrix. n. g. N.

Corpus oblongum, robustum, subconvexum. Caput ovatum, mediocre; oculis semiglobosis prominulis. Mentum leviter subsemilunariter emarginatum, lobis extus rotundatis, dente vel parvo, obtuso vel nullo. Ligula mediocris, cornea, oblonge quadrata, apice transversim truncata, libera, paraglossis cylindricis apice truncatis, sat robustis, marginem ant. parum superantibus. Palpi articulo ultimo elliptico, truncato. Labrum apicem versus angustatum, apice rotundatum. Mandibulæ validæ, apice arcuatæ, una uni; altera bi-dentata. Antennæ filiformes humeros parum superantibus, art. 2° parvo, reliquis longitudine subæquali. Thorax mediocris longitudine parum latior, antice vix, postice haud emarginatus, lateribus leviter rotundatus, basi parum angustatus, angulis omnibus rotundatis, margine elevato. Elytra ovata, infra med. parum dilatata, apice leviter angustata et acuminata. Pedes subæquales, tibiis apice bicalcaratis, calcaribus intus subtiliter serratis,

ant. leviter emarginatis, tarsis 2 ant. art. 1-3 leviter dilatatis gradatim minoribus, art. 1° cylindrico, 2° obcordato, 3° trigono, omnes art. 4° *maris* bilobo, *feminæ* bifido, art. 5° magno, unguibus validis, simplicibus; *subtus* tarsis 2 ant. art. 1-4, intermed. art. 2°-4° squamularum longepedunculatarum seriebus duabus munitis.

57. *Lepithrix foliolosa. N.*

L. glabra, supra obscure brunnea thoracis elytrorumque limbo testaceo, subtus brunneo-testacea pedibus albidis, antennis art. 3 primis flavis reliquis nigrescentibus, palpis art. ultimo testaceo, reliquis flavis; thorace ad angulos basales profundius foveolato; elytris striatis; prosterno canaliculato; long. corp. 3-4 lin.

Specimina nonnulla mens. Octob. prope Colombo nocte ad lumen cepi.

The internal vesture of the tarsi of these otherwise inconspicuous insects constitutes their most important character and is altogether of a very interesting nature. I proceed at once to describe it at full length premising that *I believe* I have both male and female before me. The individual which I take to be the male is smaller and of a darker colour than the other. The legs, with the exception of the tarsi, are the same in both sexes. They are of middling strength, the tibiæ are furnished with 2 spurs at the inner side of the apex, which spurs are finely serrated along their inner edge, the tarsi have joints 1-3 of the first pair slightly dilated, the posterior pair is elongated, subcylindric and the intermediate one forms a passage between the two. Joints 1-3 of the first pair are gradually decreasing in size, joint 1 being at the same time subcylindric, joint 2 rather cordiform and joint 3 rather triangular, joint 4 in all 6 tarsi is bilobed in the male and bifid in the female, this character being, however, less distinctly expressed in the 2 post. tarsi than in the 4 ant. ones; joint 5 is large and the claws strong and simple, a membranaceous process of triangular form covers the base of the latter above.

The internal vesture of the 4 ant. tarsi of the *male* is of the following description. The inner part of joints 1-4 of the 2 ant. ones is furnished with 2 longitudinal series of peduncled squamulæ which are of a broad, triangular form and lie like tiles upon each

other covering the sole of the tarsus; they are flanked by bristles which partake of the nature of scales, being dilated in the shape of a lancet. These squamulæ are without any particular colour, they are unconnected amongst themselves, their edges are entire and they attain their highest development at the apex of the 4th joint; in fact their development is gradual from the base of the 1st joint to the apex of the 4th. The intermediate tarsi, although not dilated, are similarly provided as the anter. ones, but only at the apex of the 2nd and at the 3rd and 4th joint, the squamulæ being of rather a square shape triangularly prolonged and peduncled at the base; the 1st joint is naked in this pair.

The tarsi of the *female* are very much the same as those of the male, excepting the 4th joint which, as above mentioned, is bifid. A further distinction exists, however, in the squamulæ. In the 2 ant. tarsi of the female these are present at the apex only of the 1st and 2nd joint (hardly distinct at the former), however, they are well developed in the 3rd and very highly in the 4th joint, the squamulaceous bristles are less conspicuous but the peduncle attains extraordinary length in the 4th joint; the squamulæ do not cover each other like tiles, but stand more freely and loosely and are curved inwards so as nearly to touch in the middle; their shape is that of an elongated triangle, they are veined and their apical edge is serrated. Being such and placed upon long, slender, peduncles they forcibly remind me of the leaflets of certain ferns (Adiantum) and hence the specific name *foliolosa*. The intermediate tarsi are similarly provided, but, as in the male, the 1st joint is naked and the 2nd furnished at the apex only. The lower edges of the 2 posterior tarsi are very neatly fenced in with small closely set spines.

I feel doubtful as to the affinities of these insects, especially if in reality I have described both sexes and if the vesture of the intermediate tarsi is allowed to be of the same importance as that of the anterior ones; however, I think they must find a place amongst the Harpalidæ as restricted by Lacordaire. I must not omit to mention that the tooth of the mentum appears to be variable, one of my specimens (a male) being decidedly without it, whilst another is furnished with a small, obtuse one.

PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL,

FOR MARCH, 1857.

At a Monthly General Meeting of the Asiatic Society, held on the 4th instant.

The Hon'ble Sir James Colvile, President, in the chair.

Presentations were received—

1. From Mr. C. Gubbins, C. S., a collection of old bricks, chiefly dug out of the oldest Hindu forts and cities of the Mohábharut period, and in the vicinity of the residence of the Pandoo family.

The following is a list of the bricks, with the dates at which they were procured; to which are added several interesting notes upon some of the localities mentioned.

No. 1.—"Ruined Tank south of old Hindu town Coel, now called Alygurh; in the Meruth Division, 1856.

No. 2.—Buraire Tank, close to Bidjeegurh, 16 miles south of Alygurh or Coel, 1856.

No. 3.—Lowest bricks of the fort Coel at Alygurh, found from 15 to 20 feet below the surface, 1856.

No. 4.—Middle bricks of the old fort Coel at Alygurh, found 10 feet below surface, 1856.

No. 5.—The upper bricks of the old Hindu fort Coel, Alygurh, 1856, found some 5 feet below the present level of the ground.

The old HINDU fort of Coel is situated in the centre of the present town of that name; Alygurh proper, is the MUSULMAN Fort, 2 miles north of the town, taken by storm under Lord Lake in 1803. The whole site of the old fort is built over, and the highest part is occupied by a mosque, and an imitation Kootoob minar. There are no Hindu buildings of antiquity in the vicinity.

No. 6.—Boolundshehur, otherwise Oonchagaon, 40 miles south of Meruth, 1849.

This is a very ancient and very high old Hindu fort. Its name (Boolund in Persian and Ooncha in Oordoo signifying "HIGH,") marks that it is the highest spot in the vicinity, in the level Gangetic valley. It is now occupied by native buildings which crown its summit, and cluster about its base.

No. 7.—A segment of circle used in the construction of wells at Boolundshuhur, otherwise called Oonchagaon, 40 miles south of Meruth, 1849.

No. 8.—Boolundshehur, 40 miles south of Meruth, a segment of a circle used for wells.

No. 9.—Meruth fort, Meruth Division, 40 miles N. E. of Delhi, 1849.

The fort of Meruth is in the centre of the populous modern town of that name, entirely occupied by native and European buildings. The natives now attribute the name to one Meroo or Meran, an attaché of the Mogul Court. But from the remains of the old system of Hindu wet ditch, connected with a dam across the river Hindun by a canal now called the Aboo nulla defence, similar to Bhurtpoor, to Mooltan, to Rohtuc and Coel, I have no hesitation in assigning to it a far more ancient date. When Timour diverged in order to capture this fort, it bore its present name, and the strata of gradual accumulation of soil alone shew, that its period must be estimated by thousands, not by hundreds of years.

No. 10.—Two bricks of Hustinapoor fort, on the banks of the river Ganges, North East of Meruth, 1849-50.

No. 11.—Acbar's Mosque, on the site of fort Hustinapoor, Meruth Division and district, 1848-49.

Having observed in several works in India of considerable merit and even of recent date a very mistaken notion of the locality of the ancient Hustinapoor, which is declared to be "on the Jumna," or "near the modern Delhi," I think it may be useful to correct this error, regarding a place of such former fame, though seldom visited by Europeans, because now devoid of any feature of interest.

This capital of the Pandoos was situated, not near the Jumna, but on the Ganges, about 50 miles north-east of Indrapressta the early

name of the rival city known to Europeans as Delhi. The site is now the centre of a large Dhak forest, as the debris and inequalities of the broken ground render it less favorable for agriculture than the surrounding country. So completely has all vestige of the old town disappeared, that the Hindus ascribe it to a miracle of the gods, who are said to have subverted the city, leaving the foundations uppermost. The only old buildings in the vicinity are a few Musulman tombs near, and the ruins of Acbar's mosque, on the mound of the old fort. A large Parisnáth temple, of recent erection, occupies the northern base of the mound. The name of Hustinapoor no doubt originated from the wild elephants, likely to have frequented the neighbourhood in the days of which tradition speaks, when the forest, still found fringing the hills to the eastward, extended unbroken beyond the Ganges into the Dooab; an epoch so extremely remote as to render it no matter of wonder, that not a relic remains of the former grandeur of this noted city: not a building or a fragment of a building remains, merely extensive mounds of rubbish interspersed with bricks of the larger size, distinctive of the early Hindu architecture. Even the extent of these mounds is now hardly to be distinguished, as they mingle with the raised broken ground that for many miles north and south of this spot marks the western edge of the course taken by the Ganges in former ages. The main river now rolls 15 miles farther east, but this intermediate space is entirely low alluvial soil traversed by numerous small water-courses, and liable to inundation in heavy rains: and immediately under the steep bank on which the fort of Hustinapoor is situated, creeps sluggishly a small branch that quitting the principal stream a little below Hurdwar rejoins about 40 miles lower at Gurmukhteesur, and still bears the name of the Boori-Gunga or old Ganges. That this small stream has intermediately been the main channel of the Ganges, is evident from the fact that only one-half of the fort mound now remains, the Eastern half having been entirely carried away by the river. During the three years that I was Magistrate and Collector of Meruth, I made every research to discover vestiges of Hindu occupancy, but failed to discover any thing antecedent to the Musulman era, save these bricks. The fact that this old site includes one of the holiest

Parisnáth shrines, would lead one to suppose that the ancient struggle between Pandoos and Koroos may have been a part of the religious contest which ended with the destruction of the Bhooddhist shrines throughout India.

No. 12.—Burnawa Fort on the river Hindron, in the district of Meruth, 1849. This is an extensive and very high mound occupying similarly to the fort at Allahabad the extreme tongue of land at the confluence of two streams. These are the chief tributaries of the river Hindun, losing their own names at this confluence. The new town of Burnawa is situated immediately to the north of the old fort mound of which the whole summit is now occupied by a Musulman shrine and cemetery. Copper coins of the early Mahomedan rule similar to those found at Canoge are occasionally turned up by the plough in the environs of the new town.

No. 13.—Ruins near Rohtuc, 40 miles west of Delhi.

No. 14.—Singpoora close by Rohtuc, 40 miles north of Delhi; destroyed by the bursting of the old canal in ancient times.

No. 15.—Singpoora near Rohtuc, 40 miles west of Delhi.

No. 16.—A, The old Khairahs west of Rohtuc, 40 miles west of Delhi. B, ruined site of Fort west of Rohtuc, 40 miles west of Delhi.

No. 17.—Singpoora or Jehangeerpoor, near Rohtuc, 40 miles west of Delhi.

The vicinity of Rohtuc presents the most curious collection of old sites and ancient mounds I have as yet had an opportunity of noting and examining in India.

The mounds immediately to the west of the present town are supposed by the natives to be the *most* ancient: the square bricks are dug out of those ancient vestiges. The ruins towards Singpoora to the north-west, are believed to be of much later date, but in themselves they present evidence of two periods of occupancy; the more ancient, affording bricks of the same pattern as those of Paniput, Burnawa, Hustinapoor, Mohabalipooram near Madras, and Sarnath near Benares. Only among these ancient remains, and at Sarnath have I found specimens of beautifully carved brick. I regret I have not been successful in obtaining for the society a specimen of the carved brick of Singpoora, of which I possessed

several in 1835, but an application to Mr. John Adam Loch, Magistrate of Rohtuc, through whose kindness I obtained the specimens now submitted, would, I feel sure, meet with immediate attention, if the Society should think it worth while. The specimen of the Sarnauth carved brick will be presented to the Society as soon as I receive it from Benares.

The site of Rohtuc is on the exact course of commerce and invasion into Northern India across the desert. A line of wells passing from the fords of the Sutlege at Pacputtun through Bhatneer, Sirsa, Hansie, Mehim, and Rohtuc were to the invading Musulman what the Russians have just constructed for themselves further north; the Hindus had sunk them for the convenience of commerce and social intercourse.* The second period of occupancy is evidently of not more than 5, 6, or 700 years date, and it is this town which is said by popular tradition to have been submerged by the unskilful construction of the former western canals under the Mussulman rule. Here houses were in 1832 standing with walls entire, and the deserted city formed an extensive government Grass preserve, tenanted at that period only by wolves and jackals, but where tigers had been found and shot by Col. James Skinner and Mr. William Fraser, when we first took possession of this territory.

No. 18.—Sonput Fort 20 miles north of Delhi: 1846.

The fort of Sonput is the centre of the populous town of that name.

No. 19.—Paniput Fort, Delhi Territory,—miles, south of Thanaisur, 1846.

The fort of Paniput is extensively built over and extremely elevated, forming part of the modern town of that name.

No. 20.—Thirwa Fort, 16 miles west of Kurnaul, Delhi Territory.

This place is entirely deserted, and situated in the midst of an extensive jungle. The fort mound is not far from a water-course supposed to have contained in former days flowing water through the greater portion of the year, but now only full during the rains.

Mr. Gubbins writes.

"Since forwarding this collection of ancient bricks, I have had an

* See Transactions, Royal Asiatic Society, Vol. I. p. 135.

opportunity of visiting the ruins of Sarnath. I found that the uncovered circular Souterrain, which is one of the most remarkable of the remains, is constructed of very perfect bricks similar in size and proportions to the long bricks of the Pandoo sites of the Mohábharut, and also to those at Mohabalipooram in Madras; as mentioned in the short account of the latter ruins published in the Society's Journal for 1853.

The bricks at Sarnath are not all precisely of the same size, but vary from 15½ to 16½ inches in length, and from 12½ to 13½ in width, and were found to be about three inches thick, ten of them *in situ* measured 33 inches. I am inclined to ascribe all the buildings, in the remains of which bricks of this type are found, to one nation, which at some remote period, about or before the era of Asoka, held sway from Mohabalipooram to Thanaisur certainly, and probably much further. I think the original dimensions of the brick mould was derived from the human cubit; that the outside of the mould was of that length, viz. 18 inches, and I infer from the fact that modern Parisnath or Suraogee (*not Brahminical*) temples are found on two of the principal of these sites, namely, Hustinapoor and Sarnath, and that these sites are still reverenced by the Suraogees, who perform pilgrimages to them from great distances, that this people was of the Buddhist, and not the Brahminical persuasion."

2. From the Government of Bombay through the Government of India,—copies of selections in the Political department, together with a Marine Chart.

3. From the Superintendent of the Geological Survey of India, and of the Geological Museum in Calcutta, a copy of the Memoirs of the Geological Survey of India, vol. 1. part 1.

Mr. Nietner of Ceylon, proposed and seconded at the last meeting, was elected a corresponding member.

The following gentlemen, duly proposed and seconded at the last meeting were ballotted for and elected ordinary members:—

Mr. H. F. Blanford and Mr. E. B. Cowell.

Baboo Joygopal Bysack, was proposed for ballot at the next meeting by Mr. Atkinson, seconded by Baboo Rajendralál Mittra.

The Council submitted the following report upon the proposition of Mr. Oldham, to reduce the subscription of non-resident members from Rs. 64 to Rs. 32 per annum.

REPORT.

"The Council having considered the proposals of Mr. Oldham for the reduction of the subscription of non-resident members of the Society from 64 to 32 rupees per annum, are unable to recommend the suggested alteration.

"However willing they might be to entertain the claim of members not residing at Calcutta, to some reduction of their contribution in consideration of the relative disadvantages under which they are placed as compared to the resident members of the Society, the financial position of the Society is not such as to authorise such a hazardous experiment at the present time.

"It will be evident, that if the subscriptions of non-resident members are *decreased* by one-half, that their numbers must be *increased* in just the same proportion to maintain the subscription list, at its present amount. Besides this too, the liabilities of the Society are directly increased by an increase in the number of the subscribers, for the journal has to be supplied to each of the new members gratis. At present there are 60 non-resident members; to countervail the reduction of their subscriptions 60 additional members must be got. The supply of the Journal to 60 new members would cause an additional charge of $60 \times 7 = 420$ Rs. A further increase of members would therefore be necessary to make up for this, and about 17 more subscribers would be required in addition to the 60 first mentioned, or in all 77 new members, a number not to be looked for within any definite period.

"The loss to the Society from the reduction of the subscription of 60 members from 64 to 32 Rupees, would be 1,920 Rs. per annum, and taking into account the charge for the Journal as above, Rs. 2,464 additional income must be obtained from new members at the reduced rate to keep the Society in its present position as regards available income.

"Neither does it appear at all certain to the Council, that the circumstance of their being less favourably placed as regards the use of the Society's Museum or Library or the management of its affairs, is really held to be an objection by a large proportion of the subscribers who are non-resident. Their contributions are given not with the expectation of obtaining any distinct equivalent in return, but solely to

forward the general objects of the Society, and the votes on the question of the reduction of the subscriptions of members generally which was lately raised, tend to shew that this is a correct view of the matter.

"In making this report to the Society, the Council think it but right to add, that a minority of their body would advocate the immediate reduction of the subscriptions as suggested by Mr. Oldham. This minority of the Council do not deny the possibility of some temporary falling off of the resources of the Society as a consequence of such a step, but having in view the altered conditions of Society in Calcutta during the last few years, and the extreme importance of strengthening the Society with new members, and enlarging its sphere of action to the utmost, they are convinced that the true policy for the Society to adopt is to throw down, as far as possible, all obstructions to its expansion, and to trust to an increased love of learning and science to enlarge the number of members and to make good any temporary falling off in the contributions which such a reduction might cause."

The President proposed, seconded by Baboo Ramgopal Ghose—

That the votes of the Mofussil members be taken on Mr. Oldham's proposition, and that a special meeting be convened for the final decision of the question, and be held after the ordinary general meeting of the Society on the first Wednesday in June.

Agreed to.

The Council asked permission to expend a sum not exceeding Rs. 1,200 in the purchase of additional cases for the Bird Room, on the recommendation of the Committee of Natural History.

Sanctioned.

The Council also reported that, on the recommendation of the same Committee, they had agreed to make the followiug additions and changes in the establishment for the Museum of Natural History.

That the wages of the present Taxidermist Mr. Swaris, Senior, be increased from Rs. 20 to Rs. 30, and of his Assistant, Swaris, Junior, from Rs. 15 to 20 per mensem, on condition that the Curator reports favourably of their work, and on the understanding that

Rupee 1 and Rupee ⅔ respectively be deducted from their pay for every day of absence.

That an additional Taxidermist or Assistant be employed temporarily at a monthly charge not exceeding 30 Rs. and that a Mistri be employed regularly at wages not exceeding Rs. 10 per mensem.

Confirmed.

Communications were received—

1. From Mr. Assistant Oldfield sending copy of a Meteorological Register kept at the Office of the Secretary to the Government of the N. W. Provinces Agra, for the month of December last.

2. From the Government of India through Colonel Birch, Secretary in the Military Department, forwarding copies of reports by Messrs. H. Schlagintweit on the proceedings of the Magnetic Survey.

3. From Baboo Rádhánath Sickdár, forwarding an abstract of the Meteorological Observations taken at the Office of the Surveyor General in the month of December last.

The Librarian submitted his usual monthly report for the month of February last.

Mr. R. Jones then exhibited a Wheatstone's Gyroscope (a modification of Foucault's Gyroscope.)

Mr. Jones explained the mechanism of the instrument and performed some experiments by means of it.

On the motion of the President the thanks of the Meeting were voted to Mr. Jones for his interesting exhibition.

Library.

The library received the following accessions during the month of February.

Presented.

Selections from the Records of the Bombay Government.

No. I.—Report on the plan of Survey and Assessment for Khandesh.—By the Government of Bombay.

Ditto No. II.—On ditto ditto for Rutnagherry.—By the Same.

Ditto No. III.—On the Zillah of Barochee.—By the Same.

Ditto No. IV.—On the Village Communities of Deccan.—By the Same.

Ditto No. V.—On the Badamee and Bagulkote Talooks, Belgaum Collectorate.—By the Same.

Ditto No. VI.—On the Kownaee Talooka, Nassick Collectorate.—By the Same.

Ditto No. VII.—On the Management of Canals and Forests in Scinde.—By the Same.

Ditto No. VIII.—On the District of Sahitee.—By the Same.

Ditto No. IX.—On a claim to the village of Modugay, in Belgaum Collectorate.—By the Same.

Ditto No. X.—On the Ahmedabad Collectorate and on the portions of the Duskroee Purgunnah, Ahmedabad and Kuira Collectorates.—By the Same.

Ditto No. XI.—On certain Purgunnahs in Ahmedabad and Koraira Collectorates.—By the Same.

Ditto No. XII.—On certain Talooks in the Dharwar Collectorate, and on the History of the Chickodee District, Belgaum Collectorate.—By the Same.

Ditto No. XIII.—On the districts lately resumed from Meer Alli Moorad, in Sindh.—By the Same.

Ditto No. XV.—Relative to the Resumption of certain villages and lands, held by the late Anajee Nursew.—By the Same.

Ditto No. 1.—New Series.—On the Supply of Water to Bombay.—By the Same.

Ditto No. 2.—On the Southern Districts of the Surat Collectorate.—By the Same.

Ditto No. 3.—On the Settlement of Farm lands in Bombay.—By the Same.

Ditto No. 4.—On the Collectorate of Sholapore and Statistical Report of Cambay.—By the Same.

Ditto No. 5.—On the ditto of Ahmedabad and a short account of the Choota Tribe.—By the Same.

Ditto No. 7.—Statistical Report on the Colaba Agency.—By the Same.

Ditto No. 8.—Ditto on the Principality of Kolhapoor.—By the Same.

Ditto No. 10.—Memoir on the Sawant Warn State and Report on the Portuguese Settlements in India.—By the Same.

Ditto No. 11.—Ditto on the Sanitary State and Requirements of Bombay.—By the Same.

Ditto No. 12.—Miscellaneous Information of the Mahee Kanta.—By the Same.

Ditto No. 13.—History of Sind, A. D. 710 to 1590, being a translation of Mahmood Masoom Namé, by Capt. G. Malet, 3rd Regt. Bombay Light Cavalry.—By the Same.

Ditto No. 14.—Physical Character of the Nerbudda River and Mineral Resources of the Nerbudda Valley.—By the Same.

Ditto No. 15.—Miscellaneous Information connected with Kutch.—By the Same.

Ditto No. 16.—Tours for scientific and economical Research made in Guzerat, Kattiawar, and the Cunkuns.—By the Same.

Ditto No. 17.—Miscellaneous Information connected with the Province of Sind, Part I. and Part II.—By the Same.

Ditto No. 18.—On the Revenue Settlement of ditto.—By the Same.

Ditto No. 20.—Memo. on the water of Nullas in Jungle Districts.—By the Same.

Ditto No. 21.—Relating to the Assessment of the Omercote and Narra districts, in Sind.—By the Same.

Ditto No. 22.—Second Report on the Supply of Water to Bombay.—By the Same.

Ditto No. 23.—Miscellaneous Information connected with the petty states in the Rewa Kanta, in Guzerat.

Ditto No. 24.—Ditto connected with the Persian Gulf.—By the Same.

Ditto No. 25.—Ditto ditto native states under the control of the Political Superintendent of Pahlunpoor.—By the Same.

Ditto No. 26.—Ditto ditto with the petty states of Junjeera, Jowar, Sucheen, Dhurumpoor, Bunsda, Cambay, Penth, and the native states in the Khandesh Collectorate, with a Map of each Estate.—By the Same.

Ditto No. 27.—Memorandum on Municipal Conservancy in the districts of the Bombay Presidency, Sind and Suttara.—By the Same.

Ditto No. 28.—Correspondence illustrative of the practice of the Peshwar's Government regarding adoptions, and the circumstances under which adopted sons could succeed to property held for the State.—By the Same.

Ditto No. 29.—Ditto regarding the concealment by the hereditary officers and others of the Revenue Records of the former Government and the Remedial Measures in progress.—By the Same.

Ditto No. 30.—Ditto exhibiting the nature and use of the Poona Duftur. A Selection of Paper on the origin of the Indian Commissariat.—By the Same.

Ditto No. 31.—Ditto, the results of the Scrutiny of the ditto.—By the Same.

Ditto No. 32.—Correspondence relating to the Canal clearances in the Hydrabad Collectorate in 1854-55. A Map accompanying.—By the Same.

Ditto No. 33.—Papers relating to a project for wet and dry docks in the Harbour of Bombay.—By the Same.

Ditto No. 34.—Correspondence on the abolition of Statute or forced Labour in Sind.—By the Same.

Ditto No. 35.—On the Hilly Region forming the Western part of the Kurrachee Collectorate.—By the Same.

Ditto No. 36.—Correspondence regarding the Fordwah in the Shakarpoor Collectorate, Sind.—By the Same.

Ditto No. 37.—Miscellaneous Information connected with the Province of Kattywar in Guzerat, with 3 maps.—By the Same.

Ditto No. 38.—Province of Kaleewah.—By the Same.

Ditto No. 39.—Reports on the Province of Kattywar and the ceded districts in Guzerat, &c. Part I. On the Proceedings adopted for the suppression of Infanticide in Kattywar, Part II.—By the Same.

Chart on Mercator's Projection for the use of Ships making the Port of Bombay, compiled from the Surveys of Lieuts. Cogan, Robinson, Ethersey, Mountrio, and Selby, Indian Navy, by Lieut. Fergusson.—By the Same.

General Description and Sailing Directions for the Coast of Kattywar, by A. M. Grieve, Lt. I. N. and Surveyor, *Bombay*, 1855.—By the Same.

Report and Directions of Ports of the N. E. Coast of Arabia, Surveyed in the years 1845 to 1849, by Lt. A. Grieve.—By the Same.

Sailing Directions for the Gulf of Kutch, by Lieut. A. D. Taylor, I. N. —By the Same.

Selections from the Records of the Government of India No. XX. Reports on the Province of Pegu, the district of Tounghoo, Journal of a trip from Tounghoo to the Salween River, &c. &c. &c.—By the Government of India, Foreign Department.

——— from the Records of Government, North Western Provinces, Part XXIX.—By the Government of the N. W. P.

General Report on the Administration of the several Presidencies and Provinces of British India during the year 1855-56, Parts I. and II. two copies.—By the Government of India.

Memoirs of the Geological Survey of India, Vol. I. Part I.—By T. Oldham, Esq. Superintendent of the Geological Survey of India.

Journal of the Photographic Society of Bengal, Nos. I. and II.—By the Society.

Journal Asiatique, Tome VIII. No. 31, Sept. and Oct. 1856.—By the Asiatic Society of Paris.

Journal of the Statistical Society of London, Vol. XIX. Part IV. Dec. 1856.—By the Society.

The Quarterly Journal of the Geological Society, Vol. XII. No. 48, Nov. 1856.—By the Society.

Catalogue of Mollusca in the Government Central Museum, *Madras.*—By the Curator of the Museum.

——— of the Shells for sale.—By the Curator.

Bijdragen tot de Taal-Land-en Volkenkunde van Neerlandsch Indie, Erste Deel. Nos. 3 and 4.—By the Royal Institute of History, Geography and Ethnology of Netherland's India.

Report of the Calcutta Public Library for 1856.—By the Curators of the Calcutta Public Library.

The Oriental Baptist for February, 1857.—By the Editor.

The Christian Spectator for January, 1857.—By the Editors.

The Calcutta Christian Observer for February, 1857.—By the Editors.

The Upadeshák for ditto ditto.—By the Editor.

The Durbin Newspaper for ditto ditto.—By the Editor.

The Morning Chronicle for ditto ditto.—By the Editor.

The Phœnix for ditto ditto.—By the Editor.

Exchanged.

The Athenæum for November, 1856.

Purchased.

Dissertations and Miscellaneous pieces relating to the History and Antiquities, the Arts, Sciences, and Literature of Asia, in 3 vols. 8vo. 1786, *London.**

A view of the English Interests in India, by W. Fullarton, 8vo. *London.*

History of the Revolt of Ali Beg against the Ottoman Porte, including an account of the form of government of Egypt; together with a description of Grand Cairo, and of several celebrated places in Egypt, Palestine and Syria, by S. L. *London,* 1784, 8vo.

A Review of the Proceedings at Paris, by M. Fennell, 8vo.

Rambles and Recollections of an Indian Official, by Lt.-Col. W. H. Sleeman, 2 vols. Royal 8vo. *London,* 1844.

Northern Mythology, comprising the principal popular Traditions and Superstitions of Scandinavia, North Germany, and the Netherlands, by Benjamin Thorpe, in 3 vols. 8vo. *London,* 1852.

Westwood's Arcana Entomologica, 2 vols. 8vo.

Architectural Ornament of all Nations exemplified in a series of Original Designs displaying the characteristic features of every class of Decorative Enrichment, 48 plates, by George Phillips.

Comptes Rendus, Nos. 16 to 21.

The Literary Gazette, Nos. 39 to 42.

The Annals and Magazine of Natural History, No. 108, for Dec. 1856.

* These papers are all from the volume of the Asiatic Researches.

Revue des Deux Mondes, 15th Nov. and 1st Dec. 1856.

Revue et Magasin de Zoologie, No. 10.

Revue Contemporaine et Athenæum Français, 15th and 30th November 1856.

Annuare des Deux Mondes histoire Générale des divers etats, 1855-56, *Paris.*

The American Journal of Science and Arts, No. 66, Nov. 1856.

Journal des Savants for October, 1856.

Analectes sur l'Histoire et la Littératur des Arabes d'Espagne par Al-Makkari, Tome Premier, seconde Partie, *Leyde*, 1856, 4to.

Schöns Vocabulary of the Hanssa Language with Grammatical Elements, *London*, 1843, 4to.

GOUR DAS BYSACK.
Librarian and Assistant Secretary.

FOR APRIL, 1857.

At a monthly general meeting of the Asiatic Society, held on the 1st instant.

The Hon'ble Sir J. Colvile, Knight, President, in the chair.

Presentations were received—

1. From His Highness Meer Hossein Ali Khan, Ex-Ameer of Scinde, through Major C. V. Bowie, Superintendent of the Ex-Ameers, a number of skins and heads of tigers, &c. a list of which is subjoined.

Tiger Skulls,	16
Sambur frontlets with horns,	5
Axis ditto ditto,	7
Muntjae,	1
Four horned antelope ditto ditto,	1
Nil-gai ditto ditto,	1
Tiger Skins,	15
Stuffed Tiger,	1
Ditto Bear (Ursus labiatus),	1

2. From Mr. W. H. Hoppner of the Survey Department, through Major Thuillier, a small number of copper coins found in Scinde near Hydrabad. The following is the note from the donor :—

"The accompanying old coins were picked up by a party of my Khalassees, when I was employed on the Scinde Survey in 1847. They are from the ruins of an ancient city now known amongst the Scindians as Bamrha-ke-Shool, or Brahminabad, some forty or fifty miles north-east of Hyderabad. The ruins afford evident traces of a walled city, about three quarter miles long, by half a mile wide. The people about the place assert that a wide river once flowed to the east of the city, of which the banks are still discernible, but which I failed to discover, though an extensive plain of sand lies on the North, East and South of the ruins. In the ruins themselves one wall, about fifty feet high, was still standing."

3. From Mr. W. Clark, through the same gentleman, a silver and copper coin dug up at Arrah in Behar.

4. From the Right Hon'ble the Governor in Council at Bombay, through Lieut. E. P. Fergusson, Superintendent, copies of the magnetical and meteorological observations made at the Bombay Observatory in 1854 and 1855.

5. From the Librarian to the Royal Bavarian Academy of Sciences at Munich, the latest publications of the Academy.

6. From Mr. W. H. Carey, Roorkee, copies of his Almanac and Annual Directory and Calendar of the Punjab, the N. W. Provinces and Oude, for 1857.

7. From Colonel Sir A. Bogle, a copy of the Maulmain Almanac for 1857.

Read letters—

1. From Mr. B. H. Hodgson, submitting for the information of the Society, and the public in general, the following extract from a letter from the Secretary to the Royal Asiatic Society in reference to the mountain Deodhanga ("Mount Everest" of Col. Waugh.)

Your letter of the 27th October, together with your observations on the incongruity of assigning a European name to Indian localities, already provided with native appellations, was received and read at our last meeting of the 17th instant, and I have the pleasure to inform you that the members present unanimously expressed their concurrence with your view of the case.

A notice of the paper was communicated to the *Athenæum* and *Literary Gazette*, and has appeared already in full in the latter journal.

I have, &c.,
EDWARD NORRIS,
Sec. Royal A. S.

To B. H. HODGSON, ESQ.

2. From the Secretary to the Royal Asiatic Society, enclosing a copy of a notification offering a prize of a sum of £300 presented by a gentleman lately of the Civil Service, for the best history and exposition either in German or French of the Vedanta system, both as a system of Philosophy and of Religion.

3. From Major Thuillier, forwarding the following extract of a letter from Lieut. Tennant, with a paper of calculations extracted from the Roorkee Almanac, relating to the annular solar eclipse of September 18th, 1857.

Camp Satgarra, Jan. 5th, 1856.

MY DEAR THUILLIER,—I have just received these from Roorkee (slips from the Roorkee Almanac and Directory for the N. W. Provinces), and I send you a couple of copies.

If you take any interest in them, pray keep one for yourself. The second I should be obliged if you would give to the Asiatic Society. I should be glad to have good observations, not only of times (which are in my special line), but of the *Hygrometer*; if possible both. The latter alone would be of little use to me, as I do not deal in those things; but Schlagintweit will be glad of them, and also Photometric observations. Perhaps the Society could call attention to the subject (if they have not done so) as the time comes near.

Yours very sincerely,
F. TENNANT.

ANNULAR SOLAR ECLIPSE.

SEPTEMBER 18TH, (Greenwich 17th,) 1857.

Calculated Positions of the Central and Limiting Lines for the Annular Appearance within Indian Longitudes.

Southern Limit.				Central Line.				Northern Limit.			
Lat. N.		Long. E.		Lat. N.		Long. E.		Lat. N.		Long. E.	
deg.	min.	deg.	min.	deg.	min.	deg.	min.	deg.	min.	deg.	min.
35 :	28·7	66 :	59·4	36 :	5·4	67 :	17·2	36 :	42·5	67 :	34·3
34 :	10·2	70 :	50·0	34 :	45·1	71 :	9·8	35 :	20·3	71 :	28·9
32 :	51·0	74 :	4·7	33 :	24·3	74 :	25·8	33 :	57·6	74 :	46·8
31 :	32·2	76 :	52·4	32 :	3·9	77 :	14·7	32 :	35·7	77 :	36·9
30 :	13·8	79 :	19·6	30 :	44·1	79 :	42·9	31 :	14·5	80 :	6·1
28 :	55·7	81 :	31·0	29 :	24·5	81 :	54·9	29 :	53·6	82 :	18·8
27 :	38·1	83 :	29·0	28 :	5·7	83 :	53·6	28 :	33·2	84 :	18·1
26 :	20·6	85 :	16·3	26 :	47·0	85 :	41·3	27 :	13·7	86 :	6·4
25 :	3·4	86 :	54·6	25 :	28·9	87 :	20·0	25 :	54·4	87 :	45·4
23 :	46·4	88 :	25·5	24 :	11·1	88 :	51·0	24 :	35·5	89 :	17·0
22 :	30·4	89 :	49·7	22 :	54·0	90 :	15·6	23 :	17·7	90 :	41·5
21 :	14·2	91 :	8·4	21 :	37·1	91 :	34·5	22 :	0·0	92 :	0·7
19 :	58·4	92 :	22·6	20 :	20·5	92 :	48·9	20 :	42·7	93 :	15·3
18 :	42·8	93 :	32·9	19 :	4·3	93 :	59·3	19 :	25·9	94 :	25·7
17 :	27·5	94 :	39·9	17 :	48·6	95 :	6·3	18 :	9·8	95 :	32·8
16 :	12·3	95 :	44·1	16 :	33·0	96 :	10·6	16 :	53·5	96 :	37·2
14 :	57·1	96 :	46·0	15 :	17·4	97 :	12·6	15 :	37·6	97 :	39·2
13 :	42·8	97 :	46·6	14 :	2·5	98 :	13·1	14 :	22·5	98 :	39·7
12 :	27·4	98 :	45·4	12 :	47·4	99 :	11·9	13 :	7·3	99 :	38·5
11 :	12·6	99 :	43·2	11 :	32·5	100 :	9·9	11 :	52·3	100 :	36·6

N. B.—Observations with the true times and Geographical position of the place will be very acceptable.

J. F. TENNANT, *Lieut. Engineers,*
1st Asst. Gt. Trig. Survey of India.

PREDICTED PHASES OF ECLIPSE OF SEPT. 17TH, 1857.

Place.	Nature of Eclipse.	Phases.	Mean Times. Greenwich.	Mean Times. Local.	Angle of Position from O's N. pt.	Angle of Position from ⊙'s vertex.	Magnitude of greatest Eclipse.
			PUNJAB.				
			h. m.	h. m.	deg.	deg.	
Murree.	Annular.	1st Contact,.....	14: 46·9	19: 40·5	53 W.	39 W.	Annular.
		Annulus forms, .	16: 0·7	21: 0·6			
		Ditto breaks, ...	16: 10·3	21: 3·9			
		Last Contact, ...	17: 31·8	22: 32·4	133 E.	154 E.	
Mooltan.	Partial.	1st Contact,.....	14: 48·7	19: 41·1	47 W.	10 E.	0·860 on N. Limb.
		Greatest eclipse,	16: 9	21: 1			
		Last Contact, ...	17: 42·3	22: 34·7	128 E.	159 E.	
Ferozepore.	Partial.	1st Contact,.....	14: 48·6	19: 46·9	48 W.	6 W.	0·915 on N. Limb.
		Greatest eclipse,	16: 14·	21: 12·			
		Last Contact, ...	17: 48·8	22: 47·1	130 E.	158 E.	
			N. W. PROVINCES.				
Mussoorie.	Partial.	1st Contact,.....	14: 52·3	20: 4·5	49 W.	5 W.	0·963 on N. Limb.
		Greatest eclipse,	16: 18·0	21: 30·			
		Last Contact, ...	17: 52·6	23: 4·8	133 E.	154 E.	
Agra.	Partial.	1st Contact,.....	14: 54·7	20: 6·8	43 W.	6 E.	0·837 on N. Limb.
		Greatest eclipse,	16: 21·	21: 33·			
		Last Contact, ...	17: 57·4	23: 9·5	129 E.	150 E.	
Lucknow.	Partial.	1st Contact,.....	14: 58·2	20: 21·9	43 W.	12 W.	0·900 on N. Limb
		Greatest eclipse,	16: 27·	22: 51·			
		Last Contact, ...	18: 4·0	23: 27·7	132 E.	139 E.	
Benares.	Partial.	1st Contact,.....	15: 2·1	20: 34·1	43 W.	17 W.	0·900 on N. Limb.
		Greatest eclipse,	16: 33·	22: 5·			
		Last Contact, ...	18: 11·0	23: 43·3	133 E.	142 E.	
			BENGAL.				
Rampore Beauleah.	Annular.	1st Contact,.....	15: 13·6	21: 8·1	47 W.	22 W.	Annular.
		Annulus forms, .	16: 42·8	22: 37·3			
		Ditto breaks, ...	16: 45·9	22: 40·4			
		Last Contact, ...	18: 23·1	24: 17·6	140 E.	138 E.	
Calcutta.	Partial.	1st Contact,.....	15: 12·2	21: 5·6	42 W.	9 W.	0·930 on N. Limb.
		Greatest eclipse,	16: 47·	22: 40·			
		Last Contact, ...	18: 27·4	24: 20·8	137 E.	131 E.	
			PEGU.				
Rangoon.	Annular.	1st Contact,.....	15: 35·1	22: 0·1	44 W.	7 E.	Annular.
		Annulus forms, .	17: 13·0	23: 38·0			
		Ditto breaks, ...	17: 17·0	23: 42·0			
		Last Contact, ...	18: 55·0	25: 20·0	137 E.	88 E.	

MEMORANDUM.—The day is considered as commencing at Noon, and the hours are measured continuously to 24th. September 17d. 0h. is therefore Noon on the 17th September.

19h. is 7 A. M. on the 18th.
24h. is Noon do. do.
25h. is 1 P. M. do. do.

Babu Joygopaul Bysack, duly proposed and seconded at the last meeting, was balloted for and declared elected.

The following gentlemen were named for ballot at the next meeting:—

Dr. W. C. B. Eatwell proposed by Dr. Thomson and seconded by Dr. Boycott.

Rájah Prásúnonáth Rái Bahádur, of Degaputtee in Rajshahye, proposed by Mr. Grote, and seconded by Mr. Atkinson.

The council submitted a report announcing that they had elected the Venerable Archdeacon Pratt a member of their body in the place of Dr. Walker, who had proceeded to Europe, and that they had added the names of Dr. Röer and Mr. Cowell to the Philological Committee, and that of Mr. Blanford to the Committee of Natural History.

Babu Rajendralál Mitra exhibited an Indo-Scythian gold coin with a Greek legend of the type figured by Professor Wilson in the Ariana Antiqua (Plate XIV. fig. 2) but differing in the figure on the reverse having a javelin in the right hand and a sword in the left instead of the sword alone. The legend is Μιορο and not Μιρο as in Professor Wilson's coin. The name of the king (Oorki) on the obverse is perfectly distinct, and with the exception of the last two letters of the title (Korano) the whole of the inscription is legible. The coin was found in the village of Manickgunge (District Rajshahye) on the estate of Babu Ramanauth Tagore and forwarded by that gentleman for exhibition to the meeting.

The Librarian submitted his usual monthly report.

Archdeacon Pratt, at the request of the President, explained with the help of diagrams the physical cause of the motion of the gyroscope, which was exhibited by Mr. Jones at the previous meeting; and afterwards illustrated by it the phenomenon of the precession of the Equinoxes, shewing its cause and the interest attaching to it, historically and scientifically, and in its bearing on Chronology. Under this last aspect Mr. Pratt showed, among other examples—

How an approximation might be made to the dates

(1) of the formation of the "Lunar Mansions," the earliest division of the Zodiac.

(2) of the age of the Vedas.

(3) of the Argonautic expedition. And

(4) of the time of Thales.

The best thanks of the meeting were voted to the lecturer, on the motion of the President, for his elucidation of these interesting subjects.

Mr. H. Schlagintweit exhibited some panoramic drawings which he had lately made in the neighbourhood of Kathmandu. These illustrations were accurately drawn to scale, and faithfully represented the appearance of the Himalayan range as seen from the valley of Nepaul.

The thanks of the meeting having been voted to Mr. Schlagintweit, the proceedings terminated.

Library.

The library received the following accessions during the month of March.

Presented.

Untersuchungen uber die Fauna Peruana von J. J. von Tschudi. *St. Gallen*, 1844-46, *folio*.—By the Author.

Memorie della Reale Academia delle Scienze di Torino, Serie Seconda Tomo XV. Torino, 1855 Bengal. 4to.—By the Academy.

Geschichte Wassaf's. Persisch Herausgegeben und deutsch übersetzt von Hammer-Purgstall 1 Band, 4to. Wien, 1856,—By the Author.

Sanskrit—Wörterbuch Herausgegeben von der Kaiserlichen Akademie der Wissenschaften, bearbeitet von Otto Böhtlingk und Rudolph Roth. Zweiter Theil, Bogen 1-10 and 11-20.—By the Authors.

Transactions of the Royal Irish Academy, Vol. XXIII. Part I. Science, Royal 4to.—By the Academy.

Proceedings of the Royal Irish Academy for the year 1855-56, Vol. VI. 8vo. Part III. 8vo.—By the Same.

The Journal of the Royal Geographical Society with Maps and Illustrations, Vol. XXIII. 1853, 8vo.—By the Society.

General Index to the Second ten volumes of the Journal of ditto.—By the Same.

Philosophical Transactions of the Royal Society of London for the year 1856, Vol. 146, Part I. Royal 4to., London.—By the Society.

Proceedings of ditto, Vol. VIII. No. 22.—By the Same.

Recueil des Actes de l'Académie imperiale des Sciences, Belles-Lettres et Arts de Bourdeux, 1855, 1—4 Tremestre, 1855.—By the Academy.

The Report of the British Association for the Advancement of Science, 1855, Glasgow.—By the Association.

Magnetical and Meteorological Observations, made at the Hon'ble East India Company's Observatory, Bombay, 1854 and 1855.—By the Govt. of Bombay.

The Almanac and Companion for the North-Western Provinces and the Punjaub for the year 1857.—By W. H. Carey, Esq., Roorkee.

Directory and Calendar for the N. W. P. and Punjaub and Oude for 1857.—By the Same.

The Tenasserim and Martaban Almanac and Directory for 1857, corresponding with the Burmese month and day for 1218-19.—By Sir A. Bogle.

The Oriental Baptist for March, 1857.—By the Editor.

The Oriental Christian Spectator for February, 1856.—By the Editor.

The Calcutta Christian Observer for March, 1857.—By the Editors.

The Upadeshak for ditto.—By the Editor.

Report of the Association of Friends for the promotion of Social Improvements in Bengal.—*Calcutta*, 1857.—By the Association.

Journal of the Royal Asiatic Society of Great Britain. Vol. XVI. Part II.—By the Society.

Abhandlungen der Mathemat-Physik classe der Koeniglich, Bayerischen Akademie der Wissenschaften. Band VII. Abth. 3. *Munchen*, 1855.—By the Academy.

Ditto der Historischen classe. Ditto Band VII. Abth. 1. Band VIII. Abth. 1.—By the Same.

Bulletin, 1853. Nos. 26 to 52.—By the Same.

Ueber die Bewegung der Bevölterung, von Dr. von Hermann.—By the Same.

Rede. von F. Thiersch.—By the Same.

Wegweiser für die Besucher des K. Botanischen gartens in München, von Dr. C. Fr. Ph. v. Martius, 12mo. 1852, *Munchen*.—By the Same.

Exchanged.

The Athenæum for December, 1856.

Purchased.

Conchologia Iconica: or illustrations on the Shells of Molluscous Animals, by Lovell Augustus Reeve. Vol. III.—Containing Monographs of the Genera Haliotis, Mangelia, Purpura, Ricinula, Monoceros, Bullia, and Buccinum.

Ditto Vol. IV.—Containing Monographs of the Genera Chama, Chiton, Chitonellus, Ficula, Pyrula, Turbinella, Fasciolaria, Fusus, Paludomus, Turbo.

Ditto Vol. V.—Ditto ditto, Bulimus, Achatina, Dolium, Cassis, Turritella, Mesalia and Eglisia, Cassidarea, Oniscia, Eburna.

Ditto Vol. VI.—Voluta, Fissurella, Partula, Achatinella, Artemi, Lucina, Hemipecten, Oliva, Strombus, Pterocera, Rostellaria, Struthiolaria.

Ditto Vol. VII.—Ditto ditto, Helix.

Ditto Vol. VIII.—Ditto ditto, Pecten, Hinnites, Mactra, Lutraria, Amphidesma, Mesodesma, Donax, Patella, Nassa.

Ditto Vol. IX.—Ditto ditto, Spondylus, Neritina, Natica, Navicella. Siphonaria, Nerita, Latea.

Smith's Illustrations of the Zoology of South Africa (the deficient Nos. to complete the set of the Library, vide Catalogue, No. 777) Nos. 19 to 28.

Sowerby's, G. B., Thesaurus Conchyliorum, or Figures and Descriptions of recent Shells: (the deficient Nos. to complete the set, vide: No. 661 of Catalogue,) Parts 5 to 16, Vols. 1 and 2. Royal 8vo., London.

The Annals and Magazine of Natural History from September, 1840 to February, 1841, (the deficient Nos.)

Ditto ditto, No. 109, January, 1857.

Rig Veda oder die heiligen lieder der Brahmanen. Herausgegeben von Max Müller, Erste Lieferung Erster Thiel, *Leipzig*, 1856, Royal 4to.

Williams's Sakoontala.

Yajur Veda, Vol. II. part 8, and Vol. III. part 1, 20 copies each.

The Book of Jonah in four Semitic versions, viz. Chaldee, Syriac, Aethiopic, and Arabic, with corresponding Glossaries, by W. Wright, 1857, 8vo.

Catalogue of Stars near the Ecliptic, observed at Markree during the years 1854, 1855 and 1856, and whose places are supposed to be hitherto unpublished, Vol. IV. containing 14,951 stars, 1856.

Journal des Savants for November and December, 1856.

Literary Gazette, Nos. 43 and 44 of 1856, and Nos. 2085 and 2086 for 1857.

Revue et Magazin de Zoologi, No. 11.

Annales des Sciences Naturelles, No. 4, 1856.

Revue des deux Mondes, 1st January, 1857.

——— Contemporaine, 15 and 31st December, 1856.

The Natural History Review, No. 1, 1857.

The Edinburgh Review, No. 213.

The Westminster Review, No. 21, for January, 1857.

The Quarterly Review, No. 201, Ditto.

GOUR DAS BYSACK,
Librarian and Asst. Secy.

1*st April*, 1857.

JOURNAL

OF THE

ASIATIC SOCIETY.

No. III. 1857.

An Account of the mountain district forming the western boundary of the Lower Deráját, commonly called ROH, *with notices of the tribes inhabiting it.—By Lieut.* H. G. RAVERTY, *3rd Regiment Bombay N. I. Assistant Commissioner, Multán.*

To any one who may ever have been stationed in the Deráját, as the important tract of level country extending from some miles north of Derá Ismáeíl Khán, to the frontier of Upper Sindh, and lying between the Indus, "The Father of Rivers," and the lofty mountains to the west, the name of ROH, will be as familiar as a "Household Word." It may not, however, be so well known to others who have never had occasion to serve so far west; and as the extent and general meaning of the term Roh is not well defined at present and but little known, I will endeavour to throw some light on the matter, from enquiries instituted with this view, and from my own information on the subject, together with what I have gathered from a few Belúch Chieftains with whom I became acquainted during my residence in the Deráját.*

An Afghán author describes Roh as, "The name of an Afghán country of which the eastern (N. E.) boundary extends to Kashmír, and the western (S. W.) as far as the river Iílmand (Helmand) near Herát, between which two countries is a distance of two and a half

* See my account of a visit to the Shrine of Sakhí-Sarwar in the Lower Deráját, with a notice of the Melá or annual fair held there. Journal of Bengal Asiatic Society, September, 1855.

months' journey. The northern boundary of it is Káshkár,* and the Southern Belúchistán. It therefore lies between Irán, Túrán,† and Hind; and the inhabitants of it are called Rohilahs."

So writes Mahabat Khán; but with regard to the east and west he appears to have confounded the south-west and north-east; and with respect to the river Ilmand, or Helmand as it is erroneously called, he is wholly in error. The Ilmand rises in the mountain of Koh-i-Bába, some twenty or thirty miles west of Kábul, and from thence takes a south-westerly course, flowing about seventy miles west of Ghuzní to Ghiriskh in Long. 64° 20,′ and eighty or a hundred miles to the west of Kandahár, from which taking a sweep almost due west through Siestán, empties itself into the Zarrah lake some five degrees south of Hirát.

With this exception, and what he calls the northern boundary, the description will almost agree, both as regards extent and position, with the Arachosia of the Greeks and other classical authors, which was the most eastern satrapy of Persian India, and would have comprised within it the whole of the country now known as Afghánistán, and a large portion of Belúchistán also. Professor Heeren in his work on the "Asiatic Nations," remarks, that "The western and northern boundaries of India were not then the same as at present. To the west, it was not then bounded by the river Indus, but by a chain of mountains, which under the name of Koh (whence the Grecian appellation of Indian Caucasus) extended from Báctriána to Makrán, or Gedrosia, enclosing the kingdoms of Kandahár and Kábul, the modern kingdom of Eastern Persia or Afghánistán." I am, for the above reasons, inclined to consider, that from the word Koh, which in Persian signifies a mountain, the name Roh is derived.

Some of the Afghán writers, who have described so graphically and so well, the events which happened in India and Afghánistán under the sway of the Moghals and the Afgháns or Patáns, always

* Káshkár or Chitrál is a country of Hindú Khúsh to the east of the Síáh Posh Káfirs, west of Panjkorah and north of Bájour, known as the country of Sháh Kutor.

† Turán—The ancient dominion of Afrásiáb to the north and east of the river Oxus.

call the mountainous tract of table-land lying between Kandahár, Ghuzní, and Kábul on the west, and the Súlímán mountains on the east; and from the range of Spín Ghar or Sufaid Koh on the north, to the frontier of Upper Sindh (as at present constituted,) to the south, by the name of Roh; and its inhabitants, not including the Belúch tribes inhabiting the southern portion, were hence known as Rohilahs. The whole of the Afghán tribes on this account have often been, and are still sometimes called, even by themselves, but erroneously so, by this name.

The present rough sketch, however, chiefly refers to that tract of country which lies between the highest peak of the Súlímán range, called the Takht or throne of Súlímán (around which the Afgháns first settled on their immigration from the west) and the frontier of Upper Sindh; and embracing within its limits the offshoots from the Súlímán range, as far as the districts of Derah Ismáæíl Khán, and Derá Ghází Khán, and the eastern portion of Síwístán west, which, as I have already remarked, is for the most part, particularly the southern half of it, peopled by Belúchís who have given, and may still give, great annoyance to the authorities. In fact, it has ever been their bugbear, as being the Alsatia of the Deráját and the western districts of the Panjáb.

To watch the passes leading out of these fastnesses, a line of Military posts, consisting of both Infantry and Cavalry, with Artillery here and there, have been established, and which are furnished from the Punjab Irregular Force exclusively; but although the different patrols are constantly on the move from one station to another, yet these fierce mountaineers, the Gael of the Panjáb, manage to pass the line of posts, which, to be effective, are too far apart, and often succeed in carrying off the cattle and flocks of their more peaceful brethren of the plain, as well as those of the Jaṭṭs and Hindús, who, possessing the best lands in the district, have more to attract the freebooters. These raids are constantly attended with blood-shed and loss of life on both sides.

Before proceeding to describe this mountainous country, it will perhaps be better to give a short sketch of the principal features of the Deráját, and more particularly of the Derá Ghází Khán district, with which I am best acquainted from having been once locat-

ed there, and which also in a measure may be said to be more closely connected with Roh and its people than the sister Derá which may be considered almost a portion of Afghánistán itself, Bunú and Murwat being included in it.

The district or zillah of Derá Ghází Khán is about a hundred and ninety miles in length with an average breadth of about thirty. It is bounded east by the Indus and west by Roh. The land is quite level and bespeaks its origin, which appears to have been formed by two separate and distinct operations—the subsidence, or rather deposit, of mud brought down by the river on one side, and earthy matter combined with small pebbly stones washed from the hills on the other, mixed here and there with patches of sand or triturated sand-stone.

Thus there are two different descriptions of soil brought from two different ranges, that from the Indus consisting of rich mud levigated very fine from the distance it has been brought, and capable of producing the more valuable crops, such as indigo, cotton, sugarcane, etc; whilst the other having come but a short distance is precisely similar in composition to the parent hills, and consists of a succession of layers of sand and clay of a coarse grain, the former predominating. In some places, this *debris* has become so hard that it might easily be mistaken for stone. The produce from this soil consists almost entirely of Bájrá (Holcus spicatus), and Juwár (Holcus Sorgum), two hardy species of grain that will grow in almost any description of land.

The same causes of detrusion being in constant operation, these two soils are supplied with water from the same sources as they themselves proceed, the rich deposit of the Indus being well irrigated by means of canals from April to October, during which months this river may almost be called a sea, and from a few Persian wheels. The poorer soil is dependent on, and scantily supplied by the small hill streams of which there are numbers, but only after falls of rain which are uncertain; on all other occasions they are with few exceptions, quite dry. The Sanghar pergunnah, the most northern division is, however, more bountifully supplied than the other parts of the district, having a small river of its own, which coming from a greater distance, taking its rise on the eastern slope

of the Súlimán range, has a greater volume of water, and flows for the greater part of the year. Still the irrigation depends in a great measure on rain also, and therefore the produce is variable and its extent uncertain; the revenue sometimes having reached as high as 94, or 95,000 rupees, and even more under the Seikh Government, whilst in some years again it has barely amounted to 50 or 55,000 rupees.

The soil not within the influence of these mountain streams is perfectly barren; thus from the village of Rájunpúr, as far south as Rújún—a distance of upwards of forty miles—the cultivated portion is entirely separated from the mountains by a narrow, bare, and sandy belt of land, in some places from twenty to twenty-five miles in breadth. This soil approaches the Indus more closely in the vicinity of Derá Ismáeíl Khán, and also near Shah-Wálí, some fifteen or twenty miles south of Rújún, near the boundary of Upper Sindh.

The water from the few wells within ten or fifteen miles of the hills is invariably bad, generally of a black colour, fœtid smell, and brackish taste, and as might be imagined, exceedingly unwholesome. The villages in this direction are mainly supplied with this element from tanks or ponds, which the people construct to contain the water flowing from the hills; and sometimes during the hot season, after great drought, the inhabitants are absolutely obliged to desert their hamlets. This is particularly the case near Dájál, close to the mountains, the people of which proceed to Jámpúr—a small town nearer to the Indus, where they remain until water becomes more plentiful.

The rich alluvial soil of the Indus on the other hand produces very luxuriant jungle, and the cultivation, commencing from the distance of about two miles inland, generally extends parallel to the river's bank for about eight or nine miles in breadth, which is irrigated from several canals. During the inundation of the river from April to October, these two miles of land above referred to are entirely flooded to a greater or less extent, and therefore but partially brought under cultivation during the remaining portion of the year; but it is invaluable as grazing land, and the Government do not fail to collect a tax termed Tríní, from the people who graze their cattle on it. Large quantities of grass too are collected and stored for fodder.

Some villages are remarkable for their date trees, which grow most luxuriantly, particularly in the vicinity of Derá Ghází Khán, and which used to yield a revenue alone of 8 or 9,000 rupees yearly to the Seikh Government.

The most fruitful portions of the land in the district are in the hands of Hindús and Punjábí Musalmáns, whilst the poorer allotments are held by the simple and more hardy Beluchís.

Some of the canals which I have already referred to, and of which there are several in the district, are yearly cleared out by the landholders themselves, as in other places of the Panjáb generally, except at Derá Ghází Khán itself, where Government has gone to the expense of 15 and even 18,000 rupees yearly, to clear them, and for which the Zamíndárs have to pay, over and above the money settlement for their lands, and the percentage as a road fund for keeping up and making new roads; but it is a remarkable fact, or was so at least a short time since, that the canals thus cleared out, were never in the same efficient state as those cleared out by the people themselves.

The only places worthy of the name of towns in this dreary district are, Derá Ghází Khán and Mittunkot; Jámpúr, Derá Dín Panáh, and Mungrotah being merely good sized villages. The other hamlets are mostly small and far apart, and generally of the most squalid appearance, bespeaking the poverty and wretchedness of the inhabitants. The general aspect of the district, with a few exceptions in the vicinity of the river, where there are some fine trees, is bare and dreary in the extreme; the only relief to the landscape and to the eye being the lofty mountains to the west, of which and of whose people, we will now attempt a description.

The hilly tract of country commences on the north from the mountains which form the southern boundary of the river Zhobe, and parallel to those eastern off-shoots or spurs from the Súlimán range, where the southern part of Damán in the Derá Ismaeíl Khán district ends, and the most northern part of Derá Ghází Khán, viz. the Sanghar district commences; as far south as the parallel of Mittunkot, where both ranges, the Koh-i-siáh or Black range, as the Súlimán mountains are now called, and the Koh-i-Surukh or Red mountains, as the lower chain is termed, make a

sudden sweep to the west as far as Dádur at the entrance of the Bolán Pass; and from Mittunkot, south as far as Kusmore, the most northern village and frontier post in upper Sindh.

The boundary from west to east occupies the space between the 68th degree of east longitude, the Súlimán, and the lower and parallel range to it, which forms the western boundary of the Deráját.

Between this space and the 29th and 31st degrees of north latitude, the country is also mountainous. To the extreme west also is a chain of mountains which appears to be an off-shoot from the Sufaid Koh, or Spín Ghar,* running almost parallel with the Súlimán range north and south, but with a more westerly inclination. The highest peak of this range is called Kund, on the eastern slope of which the river Zhobe rises, and which flowing north-east joins the Gomúl just before it pierces the Súlimán range on its way to the Indus, which, however, it fails in reaching, the whole of its water being expended for irrigation purposes. On the western slope of the mountain above referred to, the river Loráh rises, which flows south-west through the valley of Pishín, and the other streams rising in its slopes also take a similar direction.

After passing the high range bounding the valley of the Zhobe to the south, we come to the extensive plain of Borí, which is described to me as being exceedingly temperate, and in other respects resembling in extent and appearance the plain of Pesháwer; and is fertile, well watered, and carefully cultivated. The valleys between it, the mountains south of the Zhobe, and the Súlimán range, are held by the Músa Khel and Esoṭṭ Kákaṛṛs, who mostly follow a shepherd's life, and appear to be divided into a number of small and distinct communities. The Borí plain or valley is in the direct route from Multán to Kandahár through the Sanghar Pass to Pishín.

Other ranges succeed further south, extending to the valley of Zuwárah, and the extensive table-land of Tall and Chotiálí, which is inhabited by the Afghán tribe of Tor (black) and Spín (white) Taríns. More south again are the mountains familiar to

* Spín Ghar in Pus'hto means the white or Snowy mountain, which is also the signification of the Persian word "Sufaid Koh."

those who served on the frontier of Upper Sindh and Kachchí in the years 1839 to 1843, as the Káhun Hills, but more strictly speaking a portion of the Surukh Koh or Red Mountains which form the northern boundary of Belúchistán in this quarter.

The highest portion of the Súlímán range varies in breadth from eight to fifteen miles or more, with a belt of about two or three miles, consisting of *tupahs* or small portions of table-land, and immense piles of rock, forming the highest peaks, and which, being composed of a very hard black lime-stone, have been the origin of the Persian name, Koh-i-síáh, and the Sanskrit term Kálá-Pahár, both of which signify the Black Mountain. It is considerably less in height towards the south of the Takht or throne of Súlímán, than that mountain itself, which Vigne calculated to be about 9,000 feet in altitude; and thus we may safely calculate the average height to be from 7 to 8,000 feet. The whole range can be distinctly seen from the fort and camp at Multán about the time the sun sets behind it, on a clear day, or after rain; and in the winter the higher peaks are generally capped with snow. Its sides and ravines are densely covered with pine forests which attain a great height in many places. The other trees which flourish there are the Zaitún or wild-olive, the Kahwur or Kahwar ——— the Kunár, (Ziziphus jujuba), the Arak (Salvadora Persica), the Mughelán (a species of Mimosa or Acacia), the Ketmúm or Káreh ——— the Púlah ——— the Shísham (Dalbergia Sisu), the Pís, a kind of reed used in making excellent mats, and several others. Springs of the purest water flow on all sides, and in many places form small cascades.

The principal wild animals found in this range are, tigers and black bears in the higher parts, panthers, hyenas, wolves in great numbers, jackals, foxes, deer, ibex, antelope, *paṛṛa* or hog-deer, the *gud* or mountain sheep, the *már-khor*, or serpent-eater, and other smaller animals. The birds are various classes of the falcon tribe, and the more common birds of prey, partridges, pigeons, doves, etc.

The second range is called the Surúkh Koh, or Red Mountains from its being comprised of a red coloured stone as hard as the blacker stone of the higher range.

I shall now notice, in regular rotation from north to south, the different *Darrahs*, as the valleys with a pass and stream running through them are designated, together with the different tribes who hold and cultivate lands within them, to a greater or less extent. Many of the tribes are wholly in the hills and hold no lands in the Deráját itself, whilst on the other hand again, the whole of those holding lands in the Deráját, with three exceptions, also cultivate patches of land within the valleys.

The Stúríánís or Astúríánís.

The Stúríání or Astúríání Afgháns of the Lohání tribe hold the southern portion of the *Damán* or skirt, as it means in Persian, of the range of Súlímán—the most southern portion of the Derá Ismáeíl Khán district, and bounding the Sanghar district to the north—which they appear to have not very recently conquered from the Belúchís. It consists partly of the low ridge of reddish gray sand-stone running parallel to the Súlímán range. Their chief village is Oormúk, and the other principal villages are Mangul, containing about one hundred families, situated in a plain three miles from the hills; Samozaí, with about an equal number of inhabitants, nine miles from the hills; Kúey Bahárah, containing six or eight hundred families, six miles distant; and another village in the mountains bearing the same name as the one just mentioned, and peopled by some two hundred families. This portion of the Stúríání tribe, who are considered quiet and inoffensive, consists of about 1,200 adult males including thirty or forty horsemen, under a chief named Abd-úllah Khán. The remainder, numbering about 4,000 families, are located further to the west. The division to which I refer sold its flocks and herds some years since and took to farming, on account of a feud with the Kákarṛs, through whose country they had to pass with their flocks, in the hot season, in their migrations to the high-lands to the west to their *kishlauks* or summer stations.

Z'murrís, Kákarṛs, Shiránís.

The Z'murrís occupy the hills to the west of the Stúríánís and are distant from them some nine miles. They resemble the

Shiránís in their dress and customs, with the exception of being exempt from the rapacious habits for which the latter are so notorious. West of the Z'murrís again are the Kákaṛṛs, a numerous and powerful, yet simple and inoffensive tribe, the branch of which nearest the Z'murris is known by the name of Esoṭṭs. They occupy a tract of country forming a square of about one hundred miles in extent, and follow agriculture and grazing. The Shiránís who dwell about the peak of Súlimán and bound the Kákaṛṛs to the north are a numerous tribe, and can muster at least 5,000 adult males. They are about seven miles distant from the latter tribe.

Khetráns.

South of the Stúríánís, and the most northern Belúch tribe of the Sanghar district, are the Khetráns, a branch of those further south, but at present quite distinct from them under a chief named Muhammad Khán. They occupy the lands between the lower hills and the Surúkh range, and some lands in the plain at the foot of the hills, and are quiet agriculturists. They have charge of the three passes of Wah-wah, or Vahawah, Hájá, and Litarrah, but being weak in point of numbers, and not able to muster above 300 men, they cannot look after them properly, though it may be better now that a strong post of the Punjab Irregulars has been stationed at Wah-wah, which is their chief village and lies close to the hills. The other villages are Kohur, Kúṭiáni, and Litarrah. A river called the Ganj, which takes its rise in the higher range, flows through Wah-wah valley and town, and contains water all the year round, and consequently the lands are pretty well provided for as regards means of irrigation. The pass is practicable for loaded camels, and the road leads into that which proceeds to Kandahár through the Sanghar pass further south. Between the skirt of the lower range and that of Súlimán, the country is very mountainous, but patches of good land are to be met with here and there, and which are generally cultivated. The Wah-wah valley is about twenty-one miles from the banks of the Indus.

The Khetráns also hold the Liria valley and pass, which is four or five miles south of that of Wah-wah. It is so called after a small stream which flows through it. A few of the Khasráni tribe, who

adjoin the Khetráns on the south and west, cultivate some available land within the influence of this stream, on the banks of which there are several Kunár (Zizyphus jujuba), Leyah (tamarisk), Lánah (Camel-thorn) trees, and a flower called the *jungli-gul* is found in great numbers throughout the valley. There appears to be no want of water inside, but out of the valley it is by no means so plentiful; and the extent of the cultivation depends on the quantity of water collected in the various *bunds* or ponds, and from the rains which are often copious in the spring and winter months. There is a road through the Liria pass which leads into that from Sanghar, but it is only passable for men on foot.

Khasránís.

The tribe to the south and west of the Khetráns are the Khasránís who hold the Bhattí, Kháṉwa, and Kawrah passes. They are great thieves, and have given a deal of trouble at different times, so much so as to call for a severe chastisement, which they partially received from a small force under Brigadier Hodgson at the commencement of the hot season of 1853.

The Bhattí pass and valley is about six miles south of the valley of Liria, and is inhabited by about 1,500 of the Khasráni tribe, of whom Mitta Khán and Omar Khán are the chiefs. Their principal village, called after the tribe, is situated about eighteen miles up the valley, through which a small river meanders, and the banks of which are shaded by Kunár, Lánah, and Leyah trees in several places. Out of the valley water is excessively scarce.

The valley and pass of Káṉwa is four miles and a half from the preceding, and is close to the skirt of the hills. It also contains a rivulet of pure water, but out of the valley none is procurable. About five hundred families dwell in the hills in this vicinity, and the remainder of the tribe, which altogether may be computed at seven thousand souls, occupy the lands from Khas-ráni-ki Bustí to Gámak in the Deráját.

The chiefs of this tribe receive a cash payment from the British Government, besides certain fees or assignments on the lands termed *Kusúr* and *Barát;* and in former times when the route through their country was frequented by the traders from Kábul

and Ghuzní, they received a transit duty of about three shillings for each loaded camel. At present they are very poor.

Between the different valleys already enumerated and the Black Range, as I shall in future call the Súlimán mountains, the country is extremely broken, but occasional *tupahs* or plateaux may be found which could be brought under cultivation with very little trouble. A small number of Khasránís, amounting to about two hundred families, dwell between the most eastern valleys and the Black Range, on the highest and western slopes of which they graze their flocks, and where they also devote some attention to agriculture. They are, however, notorious robbers, and are in the habit of coming down the valleys which run parallel to the Black Mountains on the east, which open out on the southern part of the Derá Ismáæíl Khán district of Damán, and succeed in carrying off cattle, often without being pursued, into their own fastnesses.

The lands of the Esoṭṭ Kákaṛṛs commence about sixteen miles from the Khasráni bounds, on the western slope of the Black Range towards the north, which in this direction is about twenty or twenty-two miles broad from east to west. The Æsá Khel Kákaṛṛs, to the amount of three thousand adult males, dwell to the south-west of the Khasránís. They are both cultivators and shepherds, and possess numerous flocks; and occasionally they bring broad-tail sheep and goats into the Deráját for sale. They are of the Lúní tribe, and acknowledge Shikarí Khán as their Chief. The Khasránís are bounded on the south by the Bozdárs, with whom they are on amicable terms.

Mutkánís.

The Mutkánis are wholly in the plains. They cultivate the lands to the west of the Khasránís and Bozdárs, about Sanghar and Mungrotah, and are a very quiet community containing about eight or nine hundred adult males. Their nominal chief is Asád Khán, but Musú Khán appears to exercise the greatest power over them.

Bozdárs.

The next tribe to the south are the Bozdárs, who are wholly in the hills, which may account for their being arrant thieves and

exceedingly troublesome and turbulent. They are powerful in point of numbers, and can muster about 3,000 men if required. The chief is named Dost Muhammad Khán, who is allowed a monthly sum by Government, which may be properly termed "Black mail." He also holds several *Maafí* or rent-free wells and lands besides receiving *Barát* fees already mentioned. The Bozdárs hold the passes of Sanghar and Mahoey. Another branch of the tribe acknowledges one Nowrang Khán as their chief, and they go by the name of Nowrang Bozdárs.

The Sanghar pass and valley is so called from the small river running through it, which takes its rise on the eastern slope of the Black Range. It flows all the year round, and quantities of wheat and juwár are produced within the influence of its fertilizing stream. Other lands depending on rain and the water of the *bunds* or ponds for irrigation, are also cultivated by the Bozdárs, who here amount to about two thousand souls.

Between this valley and the Black Range there is an immense quantity of land fit for cultivation along the banks of the Sanghar river, which is generally taken advantage of by the Bozdárs of the Seháṛṛní and Súwaṛṛní clans. The Gulámání branch occupy the highest slopes of the Black Range both on the eastern and also on the western side adjoining the Afghán country. The higher range is, however, but thinly peopled, and is generally uninhabited. The Zaitún or wild olive, and the Púlah or Phúlah tree flourish on the banks of the Sanghar river towards its source, and lower down the valley the Shíshúm and the Fig.

The road through the Sanghar pass is very good, and is practicable for both man and beast, and also available for artillery. It is in fact the high road to Kandahár by the plain of Borí and the valley of Pishín; but the pass itself is completely in the hands of the Bozdárs until the Black Range is passed, and if they chose, they might throw obstacles in the way, but soon to be surmounted it is hoped, by a few staunch troops and the minié rifle. To us probably they would only be too glad to render assistance, and in the event of any necessity for the speedy arrival of troops at Kandahár, which might be reached from Multán by this route in twelve days, their services might be secured and our rear also, as

well as the communication kept up, by a small body of troops stationed on the western slope of the Black Range in the Bozdár country, the temperature of which, even in the hottest months of the year, is never disagreeably high. From their proximity to us in the Deráját there would be no fear of treachery, as in case of necessity a body of troops could, in a single night or in one day, advance half way through the pass and along the road to support this post, or aid in its withdrawal, which might thus be effected in one forced march. In case of an advance to assist our ally, Dost Muhammad Khán, and with a previous arrangement on his part, immediately on clearing the Black Range, a force advancing from Multán would enter a fruitful and temperate district where supplies and forage of all kinds and descriptions might be obtained; and this in itself would tend greatly to lighten the force, from there being no necessity for burthening it with a quantity of Commissariat stores, or even as much as usual.

Springs of good water are also numerous, and this aliment can be procured in any quantity at the different stages along the line of march. It occupies a caravan about three hours from the time of entering the last pass which leads through the Black Range, until the difficulties are overcome and the western slope gained. After passing this range the mountains again begin to rise at a distance of about twelve miles to the west, but they are comparatively low, and the difficulties of the road are by no means so great. The passage over the former range would be, however, a difficult matter, should the Bozdárs occupy and fortify the defiles beforehand.

The next valley and pass to the south is that of Mahoey, which contains some good land, and is held by the Bozdár tribe. A small river flowing from east to west gives name to the valley, which leads into that of Sanghar, distant from it seven miles. The road is practicable for loaded camels and such like beasts of burden, should the Bozdárs throw no obstacles in the way. The Gulámání branch of this tribe dwell about the Black Range, and to the west of them again the Lúni Kákarṛs, who are by far the most numerous tribe in this vicinity.

The Bozdárs are bounded on the east by the Mútkánís, south by

the Lunds in the Deráját and by the Húdiání Lágháris in the hills. They are on friendly terms with the Lúni Afgháns and the Khasráni Bélúchís, who bound them to the north-east and west, but they are at enmity with Mír Hádjí and his Khetráns who bound them to the south-west. The Jaafir Afgháns, a small community of about 1,500 souls, whose chief village is Ddlágh, adjoin them on the north. They are chiefly agriculturists, though some are traders, and their lands are extensive, well-watered and produce considerable quantities of wheat and other grain.

Lunds.

The Lund tribe like the Mutkánís are wholly in the plains, and adjoin them to the south. They cultivate the lands from near the foot of the hills at the Súrí pass to round about Pír Amdáni, their principal town, Kot Kúndah, Shádun, Rámun, Gúmán, Kálá, etc. The lands towards the river Indus are generally held by either Hindús, Suyeds or Jaṭṭs. Those belonging to the Lunds depend wholly on rain and the water of their ponds for irrigation, but they always manage some how or other to keep their lands in cultivation.

From the Súrí pass to near the Black Range, a distance of eighteen or twenty miles, there is no land fit for agricultural purposes, and it is therefore generally uninhabited. The Jélálání Bozdárs dwell about the high range on the western slope to the amount of about three hundred families. They follow agriculture, and dwell in small walled villages called Kotlahs. The cultivation is scanty and depends on rain to bring the crops to perfection. A portion of the Lúní Afgháns occupy two walled villages in Kotlahs a short distance to the west of the Bozdárs.

Inside the Súrí pass there is a lake said to be four or five miles in extent, containing hot water that is constantly running or in motion, and the peculiar phenomenon respecting which is, that the mineral water rises in waves or eddies which again almost immediately disappear. The pass belongs to the Lunds, and the valley appears to be uninhabited.

The chief of the Lunds is Fazal Alí Khán; and the tribe, which is quiet and easily managed, can muster about 1500 adult males. They have the Mutkání tribe on the north, the Bozdárs and

Hudiáni Lagháris on the west in the hills, the Khosahs to the south, and Suyeds, Jaṭṭs, and Hindús towards the Indus on the east.

KHOSAHS.

South of the Lunds in the Deráját are the Khosahs, who are acknowledged to be the bravest of the whole of the Belúchís. They have the name of being great thieves, but they are really no worse than their neighbours. I believe a deal of rascality carried on by the Lagharís, has from time to time been unjustly laid at the door of the Khosahs. They are a powerful tribe, when their bravery is taken into account, being able to muster 1600 or 1800 men; but they are split into three divisions, of whom Kourah Khán, Azím Khán, and Khán Muhammad respectively are the chiefs. The former, the real and rightful head of the Khosah tribe, is a fine old fellow, who rendered good service to the British during the rebellion of the incorrigible Multánís, at the outset of which, (and not when it was found that the enemy was the losing side,) he joined the force of Lieutenant H. B. Edwards and the Seikh Colonel Cortlandt, bringing with him about a thousand of his clan. He enjoys, in comparison with some of the Multání Patáns, (who only deserted Mulráj at the last hour,) but a small pension for his faithful services. His son, however, holds the rank of Ressáldár in the Deráját Mounted Police.

The Khosahs are with few exceptions, wholly in the plains. They are at enmity with the Lagháris and Bozdár clans but are on friendly terms with the Khetráns, whose chief Mír Hádjí is connected with the Khosah chief by marriage, having espoused, I believe, a daughter of Kourah Khán's. When the late Díwán Mulráj defeated the Khetráns in their own fastnesses, this chief made influence for himself with the Diwán through Kourah Khán.

The next valley or cluster of valleys, to the south of that of Súrí held by the Lunds just described, is known by the names of Maṭṭí Kalerí, Sur, and Reh-karrn, from four small streams flowing through them from north to south, and close to the skirt of the hills. About one hundred and twenty of the Khosah tribe dwell in this valley or valleys, which contain springs of salt and brackish water. The Bozdárs of the Mahoey, or Mohey-wálá clan dwell in the

higher ranges of the Black mountains parallel to these valleys, and the Gulámání Bozdárs round about it and lower down on the western slope facing the Afghán country. Streams and rivulets are numerous in this direction, and juwár, makai, and wheat are produced in some quantities, together with a little cotton sufficient for home consumption. The principal trees are the Zaitún or wild olive and the Púlah.

There is a road through this valley to the Afghán country which is practicable for camels, and water is procurable at each stage. It, however, leads into the pass through the Black Range in the Bozdár country already described; and as the Bozdárs hold the principal and more difficult defiles of the passes leading into it, they are able to throw obstacles in the way. Beyond the Black Range to the west, in this direction, there is a level tract of country, or large open valley, as it may be more properly termed, about ten miles in breadth belonging to the Lúní and Kákaṛ Afgháns already referred to. Beyond this the hills again rise, but they are not nearly so lofty as those to the east.

South of the valley and pass just described are the small Darrahs of Ghází, Satá'í, Beh-lab, Káhbí, Súrí, and Ghámán, so called from the small streams flowing through them, which, at a short distance from the hills, are wholly lost or expended in the irrigation of the lands. Six hundred Khosahs cultivate those spots close up to the foot of the hills, which are within the Yárú Bátil village bounds. From this to the eastern slope of the Black Range distant about twenty-five miles, the country is totally uninhabited, but the western slopes are held by the Khetráns. There are no roads fit for beasts of burthen through these small valleys, and, even for men on foot, the defiles leading into the great route are difficult in the extreme.

Next in succession south are the small valleys of Sufaidú, Kárú or Gárú, Súr and Ráey, all of which are within the Yárú Bátil boundary. The Khosahs in this direction acknowledge Khán Muhammad and Khuda Baksh as their headmen. About six hundred of the tribe cultivate the lands close to these Darrahs, which are very small and distant one or two miles from each other. There are springs of water in the valleys of Sufaidú, Súr, and Kárú, but in the latter is a mineral spring, the water of which is

extremely bitter. A few families of the Chandíah and Sháhání Bozdárs dwell between these valleys and the Síáh Koh, or Black Range. The former live by plunder alone, but the latter have some cattle, and they cultivate about a hundred acres of land, which is irrigated from the streams rising in the mountains just mentioned.

Next in rotation are the small villages of Dalánah, Zai, and Sabkú-ah, the only one of which containing a pass of any consequence is the former, held by the Khosahs under Azím Khán, six hundred of whom dwell close to the skirt of the hills, and about forty families within the valley itself. They keep goats and buffaloes. There are a few date trees in this valley which are considered great rarities by the Belúchís. From this *madd, awl,* or camp, within the Darrah to the Black Range is about twenty-one miles, the whole of which space is covered with lofty and rugged mountains over which there are no roads, and which men on foot can, with difficulty, penetrate. There are a number of the Laghári tribe, who adjoin the Khosahs on the south, settled near Dalánah village. Beyond the Síáh Koh parallel to these valleys are the Khetráns who occupy a very large tract of country, and beyond these again the Afgháns, and further south the Murrís.

The most important Darrahs within the Khosah bounds have now been mentioned, but the Khosahs likewise hold all the country at the foot of the hills from the Ghuzí pass north to Dalánah south. These lands depend entirely on the quantity of water of the mountain streams, with that collected in the different ponds, and from the occasional rains, for irrigation; and in seasons of drought the Khosahs are under the necessity of deserting them for other lands nearer to Derá Ghází Khán. Some of the tribe are graziers and have numerous flocks. They are bounded north by the Lunds, and south and west by the Laghárís. Their chief villages are Yárú and Bátíl, besides several smaller hamlets.

Laghárís.

The Lághárí tribe dwell partly in the Deráját, from the village of Chotí Pá'ín to the foot of the hills, and partly in the mountains. Pheir chief villages are Widor, Sukhí-Surwar, Chotí Bálá, and Chotí Pá'ín. They are powerful in point of numbers and can mus-

ter to the amount of two thousand adult males, but they are not held in much estimation for their bravery, and are notorious thieves, but exceedingly sly ones for Belúchís, indeed they may be termed the foxes of Roh. Their chiefs Jellál Khán and Jemál Khán, who receive a pension from Government, or some money allowance, which is just the same, not long since were all and every thing with the Local authority, but lately their power appears to have been on the decline. They were engaged in the Multán rebellion, and like the Multáni Patáns, who first fomented it and made Diwán Mulráj their tool, were one of the mainstays of the rebels, until they discovered that the Diwán's was the losing side. The Laghárís, however, although they at last left Mulráj, connot be accused of treachery and falsehood, which appears exclusively an accomplishment, or part of the nature I may say, of the Pátans of Multán, for the former did not desert to the enemy for the sake of the loaves and fishes as the latter did.

The Laghárí tribe hold the Darrahs and passes of Widor, Sukhí Surwar, and Chotí. The former is so called from the large village of that name about sixteen miles west of Derá Ghází Khán, and eight or nine miles from the skirt of the first range of hills. It is the principal village of the Laghárí tribe, but the Widor pass itself is within the bounds of the village of Beylah, of which Mirán Laghárí is the headman. Two hundred of the tribe cultivate lands close to the entrance of this valley, which is itself held by the Hudiáni branch of the tribe, who, to the number of five hundred families, are dispersed in small hamlets or *awls* between this valley and those on the eastern side of the Black Range. The Hudiánís are arrant robbers, extending their depredations both to the property of the Afgháns to the west of the mountains and to the Deráját to the east; all is fish that falleth within their net. The valley contains some springs of pure water, which is also abundant from this to the Afghán country. At the hamlet or *awl* of Hudiáni further up the valley, there are numerous Shíshum trees. The road through the pass is practicable for beasts of burthen as far as the high range, but the defile leading over it is in the Khetrán country, and is so narrow that one person can scarcely pass.

South of Widor is the pass of Sukhí-Surwar, so called from the

town and shrine of a Muhammadan Pír or saint bearing that name. The town and shrine are built on a spur from the lowest range of hills, beneath which, to the north, is the stony bed of a torrent or mountain stream, but it is always dry save after heavy falls of rain in the mountains. The Majáwirs or attendants at the shrine cultivate a small quantity of land, which is dependent on the same sources of irrigation as other lands already described. The people are supplied with water, black and fœtid in smell, from the sandy bed of the torrent above mentioned, at a place three miles up the defile through which it finds its way, in which large holes called wells are dug, and on this supply they wholly depend. The hasty sketch which accompanies this paper shows the entrance to the defile referred to, and will give some idea of the style of country and scenery.

The country between this town and the Black Range is generally mountainous in the extreme, but here and there patches of available land are to be met with.

The Sukhí-Surwar pass is the direct route to Kandahár through the district of Tall and the Pishín valley; and in Akbar's time couriers are said to have been in the habit of reaching Multán from that city in six days. Water is plentiful along the whole line of road, which is not only practicable for loaded camels, but for artillery also, or at the worst could be made so very easily, for there are no great natural obstructions to prevent it. I have already given an account of the town and shrine in an article which appeared in a former number of the Journal of the Asiatic Society of Bengal for September, 1855. The town and pass both belong to the Laghárís.

There are several smaller valleys to the south of Sukhí-Surwar, viz., Ghází-wár, Kun-hí-wár, Sufaid Gharí, Kháṭṭí, and the Káhá or Harrand pass, including that of Chotí, so called after the village of Chotí Bálá, or Higher Chotí, situated close up with the hills, but they are all within a few miles of each other, and of little consequence. They are mostly uninhabited, and are very similar to those already noticed.

I was informed by Jellál Laghárí, who visited me whilst at Sukhí-Surwar in April 1853, that at the distance of a day's march inside

the lower range of hills, through rather a difficult country, he possesses a tract of table-land of some considerable extent, well wooded and further adorned with a fine lake. He told me that he usually retired to this place with his family in the hot season; and he spoke in high terms of its beauties, of its climate, and of its fruits, some of the grapes from which I have often tasted. He promised to take me to this pleasant spot, this Roh Felix, if I could obtain leave of absence for that purpose, but I soon after left the Deráját and lost the opportunity, of which I was most anxious to avail myself. A locality of this kind, within reasonable distance, and in the country of a friendly tribe, would be a highly desirable place for a little recreation and cool air in the hot months, for Europeans condemned to broil at Asuní and Derá Ghází Khán.

The Laghárís are bounded on the south by the Gurcháhís, and west by the Khetráns, to give some account of whom and of whose country, we must for a time leave the Deráját and proceed west, before describing the valleys and passes further to the south.

Khetráns.

The Khetráns are a numerous and powerful tribe occupying a tract of country east and west of the Súlimán or Black Range, about sixty miles in width and eighty in length from north to south, and extending from the parallel of the Súrí Darrah of the Lund tribe to the boundary of the Murrí country, the most southern portion of the Highlands of Belúchistán on the north-east. The chief of the Khetráns is Mír Hadjí Khán, who can muster a force of 3,000 fighting men including about 1,000 horsemen. They reside generally in small forts or walled villages called Kotlahs. Their country is well-watered and temperate, and they cultivate a quantity of grain of which wheat, and *makia* (Indian corn) appear to be the staple kinds, together with a small quantity of cotton sufficient for home consumption. They also possess numerous herds of camels and other cattle, and flocks of sheep and goats. On the west they are neighbours to the Lúní and Kákaṛṛ Afgháns; on the north to the Músa Khel Kákaṛṛs and the Bozdárs; on the south to the Murrís; and on the east to the Laghárís and Gurchánís.

The Khetrán country is distant about thirty-five or forty miles

from the banks of the Indus, and about half that distance from the first or lower chain of hills. The Black Range here averages about nine miles in width from east to west, with a belt in the centre from one and a half to three miles in breadth, and from which the highest peaks shoot up. This is the most rugged portion of the whole, and correctly speaking, forms the true boundary of Síwistán on the east and south. There are many level spots capable of cultivation watered by numerous small streams, which, after heavy rains, increase considerably in volume. Those rising on the eastern slope of the Súlimán Range in some instances find their way into the plains of the Deráját, and those on the western slope flow in that direction, fertilizing the country in their track.

That part of the high range which is inhabited by the Khetráns runs almost due north and south like the more northern portion; but a short distance to the south of the parallel of Derá Ghází Khán, in 30° of north latitude, it makes a bend towards the west for about fifty miles, and then runs at nearly right angles from east to west towards Dádur at the entrance of the Bolán Pass. In this lengthy valley, formed by the southern slope of the Black Range just referred to, and the northern slope of the Surukh Range which runs parallel to it to the south, lies the fort and town of Káhun, so famous for its defence during the Afghán war; and in the latter range the equally famous Nufúsk Pass, from which the late Major Clibborn and his troops were forced to retire after severe loss in attempting to relieve that post. The westerly bend of both ranges is held by the Murrí tribe and both are generally known as the Káhun Hills.

The road from Multán to Kandahár by the Bolán, lies through the Harrand pass to Káhun, which I shall have occasion to refer to again in a future paragraph.

The Khetráns are on friendly terms with the Khosahs and the Laghárís, but are at feud with the Lúní Afgháns, the Bozdárs, and the Murrís.

So lately as July 1855, the Hamzahzai and Músa Khel clans of the Lúní and Kákaṛ Afgháns, made a raid on the lands of the Khetráns and Hudíaní Laghárís and carried off a number of their cattle after killing seventeen of the latter. The assailants, however, were pur-

sued by the Khetráns, and Laghárís, who mustered to the number of two thousand. They came up with them before they could succeed in reaching their own strongholds, and rescued the cattle after a severe skirmish, in which the Afgháns are said to have lost one hundred and sixty men killed and wounded.

Gurchánís.

The tribe to the south of the Laghárís are the Gurchánís, the chief of whom Hyder Khán holds an appointment in the Deráját mounted Police, and enjoys *Kusúr* and *Barát* fees or assignments on the lands. The tribe is divided into three septs—the Lasháris, Durkánís, and Chachrís, which are again subdivided into several smaller clans, who altogether can muster at least two thousand adult males. About one half the tribe are shepherds and graziers and dwell in the hills, the remainder cultivate the lands in the vicinity of the fort and town of Harrand, the former of which was built to keep them in awe, as well as to defend the pass leading by Káhun, Siri, Bagh, Dadur and the Bolán Pass, to Quettah or Shawl and Kandahár. Their chief villages are Lal-gurh, Chutú, Thall Wuzár, and Pitáfí. They hold the different minor Darrahs from that of Chotí of the Laghárís, as far south as the valley and pass of Cháchur, which together with those of Kháṭṭí, Káhá or Harrand, and the pass of Khalgerey, are the furthest to the south, and the most important of the whole.

The lands within the Káhá or Harrand pass are cultivated by the Gurchánís. They are well-watered by a stream running through the valley, which also supplies the *tupah* or plain on which Harrand stands.

The Cháchar valley contains a mineral spring and a little sweet water, but it is totally uninhabited, and is chiefly remarkable on account of the great road to Quettah or Shawl by Káhun and Dádur which runs through it. It is practicable for beasts of burthen, but I am informed that it is not so good a road as that through the Súrí valley further south. The different encamping or halting grounds by this route are;—1st, To Múní, 12 miles; water bad, and quite hot. 2nd, To Tobah, 12 miles; excellent water. 3rd, To Gond, 12 miles; hot and brackish water. 4th, To

Kaṭṭar Pahár, the boundary of the Gurchání country, 15 miles; water good. The next six stages lead through the Murrí country, after which the territory of the Khán of Khelát is entered.

Drísháks.

The tribe next to the Gurchanís to the south, are the Drishaks, who are very peaceably inclined, but much bullied by the Gurchánís. They are pretty powerful in point of numbers, and can muster 2,000 adult males, or even more. The chief is named Bakshan Khán who receives some *Kusúr* fees, and their chief village is Asuní, at which a strong detachment of the Púnjab Irregular Force is stationed, consisting of half a Light Field Battery of three guns; a Regiment of Cavalry; and a wing of an Infantry Corps. The other larger villages are Bágh, Rajunpúr, and Fazilpúr. The Drí-shaks are bounded on the west by the Bughtís and Gurchánís in the hills, and on the south by the Mazárís in the Deráját.

As we proceed further south the dreariness of this inhospitable region increases, and the country for many miles, both in the Deráját and in the hills, is a howling wilderness. The first Darrah or valley south of Cháchur, the most southern in the Gurcháuí country, is that of Fujrú, through which a road leads into the great route to Afghánistán by Tall and Chotiálí. The valley is quite sandy, but on the southern side the dreariness is somewhat relieved by a few trees. From this to the Gurcháuí country, a distance of about thirty miles, the whole space is without inhabitants and without cultivation.

Four miles and a half south of the preceding is the valley of Baghárí with a pass, which also leads into the great route to the Afghán country by Tall and Chotiálí. Like the preceding it is sandy and unfit for cultivation. It has a few trees, but is uninhabited. From the skirt of these hills towards the east, the nearest inhabited spot within the British territory is the village of Futtihpúr distant six miles, where a few of the Drig tribe are located.

The valley of Jehazigí or Jehazkí is six miles further to the south. A road winds through it leading into the great road from Harrand but it is difficult and very heavy in many places from the sandy nature of the soil. It is uninhabited, and there are no signs of

cultivation near it for a number of miles in the direction of the Indus. The valley itself is thirty miles distant from the high range, which in this direction is inhabited by the Gurchánís.

Next in rotation comes the Thok valley, distant four or five miles from the preceding. The whole distance from this to the Black Range is mountainous and sandy with a few stunted trees and shrubs scattered here and there. Water is also very scarce, and even when procurable it is exceedingly bitter. About twenty-five miles to the west of this valley there is a village belonging to the Gurchání tribe called Múní or Marrí, inhabited by about three hundred people, who are mostly shepherds. There is no cultivation in the British territory to the east nearer than the village of Gámú, a distance of nineteen miles, containing five hundred inhabitants chiefly of the Drig clan.

A few of the principal stages by the road through this valley to the Afghán country by way of Tall and Chotiálí, are: 1st, To Makárí 12 miles, where there are a number of shady trees, but the water is bitter. From thence to Phora Phaṭṭ 17 miles, where there is excellent water to be procured, and several shady trees. The next stage is Phála Wagh, about the same distance as the last stage and possessing similar advantages. The next journey brings the traveller to Lassú 12 miles, which has no particular advantages as a halting-ground; and from thence to Bákí or Bárí Khán in the Khetrán country, a distance of 19 miles, from whence a long march of about 30 miles brings you to Kholo or Kaholo, where the water is pure and abundant, and shady trees are available.

The Chák or Chág valley and pass is three miles from that of Thok, and the country as far as the Black Range, a distance of nearly 40 miles or more, is uninhabited. The valley contains nothing but sand and a few stunted shrubs, indeed sand and rocks appear to be the principal, if not the only variations of the landscape in this part of the Deráját. From this Darrah a road leads to the village of Kot Islám Khán, the head-quarters of the Bughtí tribe, which is parallel to the Súrí Darrah further south. But the whole country between is a perfect desert, without inhabitants or sign of cultivation. The nearest inhabited spot in the direction of the Indus, is the village of Kádirah belonging to the Mazárí tribe, and thirty miles distant.

As we proceed further south from Mittunkot, the breadth of the belt of cultivation gradually decreases, until at the village of Rojân it does not extend more than two or three miles from the western bank of the Indus.

The valley of Chák and those valleys which follow, are parallel to the lands cultivated by the Mazárí tribe in the Deráját, and to the Murrí and Bughtí country to the west, but, as already remarked, for several miles in breadth the country at the foot of the lower range of hills, and for a considerable distance inside, is totally uninhabited and generally without water; and these obstacles alone tend as much, if not more, to restrain the Murrís and Bughtís from making raids in large bands on our frontier in this direction, than the few troops scattered along it at great distances from each other, as the latter have, on more than one occasion, found to their cost. It is impossible for a large body of men, particularly horsemen, which form the principal strength of the Belúchís on such occasions, to subsist within these hills or even in the valleys at the skirt of them, which they would naturally do in all probability to wait for a favourable opportunity to pounce upon their prey. Small parties, however, do make their appearance occasionally in the Mittunkot district, and I recollect that in the hot season of 1853, they passed the line of frontier posts without being discovered for some time, and although subsequently pursued, they succeeded in carrying off some cattle and cutting up some of the pursuers.

Mazárís.

The Mazárís who occupy this part of the Deráját are a numerous tribe containing about 4000 adult males, of whom Dost Alí, and Mahabat Khán are the chiefs. There are about eight hundred (Soolais) located at Kusmore, the most northern village of Upper Sindh. The remainder of the tribe is distributed from the village of Bhágrú downwards, and are all in the plains. They receive half the revenue *inaam* or rent free. They are bounded on the west by the Bughtis, south by the Brahúís, and north by the Drísháks.

The next valley south of Chák is that of Gándrúsí from which it is distant about three miles. Like the others south of Chá-chur, it is without inhabitants, but it contains several warm

mineral springs, as also a little drinking water and a few trees. The pass through it leads into the Khorasán route, but it is difficult. It is about fifty miles from this to the Black Range, and to Hasan Sháh ke Kotlah, the nearest hamlet in the British territory, which is peopled by a few Suyeds, is a distance of thirty miles.

As we proceed further south the country becomes more broken, and the lower range is not so well defined as hitherto, being in many places much lower than that which we have passed on our way south. The first valley south of Gándrúsí is called Tahání from a small river flowing through it, which rises on the western slope of mount Gendárí (referred to in a subsequent paragraph) and is distant from the last valley nine miles. It can scarcely be called a valley, for the ground all round is very much broken, and rises on all sides, in mounds and bluffs which are generally of considerable height. There is a road through it along the stony banks of the river when full, and along its bed when its waters have somewhat subsided. It crosses the Harrand route, and enters that leading into the Afghán country through Tall and Chotíálí, but it is difficult and tedious. The Black Range is thirty miles distant from this Darrah and the nearest village to the east is Badli belonging to the Mazárís, distant eighteen miles.

The Zangí Darrah, so-called from a river of this name rising on the eastern slope of Mount Gendárí, which forms the pivot, if I may be allowed to use a military expression, on which the Surúkh Range turns directly west, and at right angles to its former direction. It proceeds thus for about sixty or sixty-five miles, and parallel to the Black Range on the north in its bend to the west, the two forming a long and extensive valley which runs up almost to Sarwod to the north of Lehrí in Kutch Gandáwah, and in which, about half way up, lies Kúhun the chief town of the Murrís. The Pass of Nufúsk is in the southern or Surúkh Range.

The Zúngí valley, which is very stony and much broken, contains but one small hamlet belonging to the Bughtís named Alí Khán, and the only water procurable in the valley is bitter. The road leading through it is steep and difficult for some distance, but improves as the traveller proceeds westwards to Káhun, which is eight stages distant from this valley. The different halting-places

are; 1st, Thak, a distance of ten miles, where water is abundant, and several Zaitun or wild olive and Kahor trees afford shelter; 2nd, to Nathál, about eleven miles; water procurable, and a few trees; 3rd, to Burbur, or Barbur distant twelve miles; trees and water; 4th, to Tharí or Tthárí, twelve miles; trees and water as at last halting-ground; 5th, to Marú or Murú, twelve miles; water procurable; 6th, to Pátur (on the Ilassí river, of Walker's map) on the banks of the Súrí river, a distance of thirteen miles, water and trees; 7th, Kála Páni, eleven miles; trees and good water; 8th, to Káhun a distance of thirteen miles.

Four miles to the south of the Darrah just described, is that of Jíárí, which contains a few trees. Water is also procurable in small quantities. It is exceedingly sandy and mountainous, and is uninhabited. The road through it joins the Káhun route, and is steep and difficult in many places.

The next and last Darrah in the Derá Ghazí Khán district is that of Súrí, so called from the river of this name which rises in the Dubb hills, a little to the west of Mount Gendárí, and is about twenty miles from Kot Islám Khán, the principal village of the Bughtís, which is situated at the foot of the hills. There is a spring of pure water in the valley, and several *ját*, *sí-áh*, and *mughel* trees. Towards the east it is uninhabited, but further up the valley there are a few small *awls* or hamlets belonging to the Bughtí tribe. The road winds along the banks of the river, and sometimes through its bed, but like all similar routes it is tedious and steep in many places. It is quite practicable for camels and horses, but not for wheeled carriages, though on the whole it is the best road south of the pass of Sukhí Surwar. The village of Sháhwálí containing about six hundred inhabitants of the Mazárí tribe, is nine miles from the entrance of this valley in the direction of the Indus.

Murrís.

The Murrí tribe holds the mountainous country commencing from a few miles to the west of the Surúkh Koh or Red Range, which with its Darrahs from Fujrú south, have, with the exception of those of Zangí and Súrí, been mentioned as generally very sandy,

stony in many places, and uninhabited as far as the southern slopes of the Black Range, to the north of which the Murrís are bounded by the Kákaṛṛ and Lúní Afgháns; and westward towards Dádur at the entrance of the Bolán pass. They are bounded on the north by the Khetráns, and Laghárís, and south by the Bughtís and Brahúís. Their chief town is Káhun already referred to.

The Murrís are a powerful tribe, and their present chief Dín Muhammad Khán, can bring 3,000 of his clansmen into the field at any time, about one-third of whom are well mounted on the hardy horses of the country. They make occasional raids into the Mittunkot district, but in very small numbers, although as I have before remarked, merely restrained from undertaking greater expeditions in the same direction by the inhospitable nature of the country, where water is exceedingly scarce and only procurable even in moderate quantities at certain places, and where food, both for man and beast, has to be carried with them.

Bughtís.

The last tribe remaining to be noticed as appertaining to this imperfect sketch of Roh and its people, are the Bughtís, robbers more notorious even than their neighbours the Brahúís. They acknowledge Islám Khán and Daría Khán as their chiefs, the latter, however, has but little power. Although the Bughtís have been much broken up by Sindh policy, and a large number to the amount of about 12,000 have been settled in and around Larkhánah in that province, yet they still can bring together, in case of necessity, some 4,000 adult males. They pay little or no attention to husbandry, and mainly depend on plunder for subsistence. Within the last few years two hundred families of the tribe under Daría Khán the partner in the chieftainship, have joined the Murrís.

When Lieutenant R. Young of the Bengal Engineers, who was employed in a civil capacity before the annexation of the Panjáb, went into the Lower Deráját in 1849, to settle the lands of the Drísháks and other tribes, three hundred of the Bughtís became desirous of turning their swords into reaping-hooks, and waited on that Officer along with Gourah, the brother of Daría Khán above mentioned, and requested that a portion of land might be allotted

to them, but their reasonable request, from what cause does not appear, was not complied with.

It was whilst in this vicinity, that Lieutenant Young penetrated into the hills as far as the mountain of Gendárí, and made a rough survey, the sketch of which I have embodied in the map accompanying* this paper, and for which, as well as other information on the present subject, I am much indebted to him.

Before bringing this paper to a close I must not forget to offer a few remarks regarding the former trade of the Deráját, which has now greatly or almost wholly declined. During the energetic rule Sáwan Mall and Díwán Mulráj his son, to whose government of Multán the present district of Derá Ghází Khán was attached, the Afghán merchants used to pass through the latter district by way of Harrand, Sukhí Surwar, and Sanghar to Multán, because the customs duties were much lower than in the sister Derá; for their proper route, or that generally adopted, lay through Derá Ismaæíl Khán and Leiá to Multán, from whence a few passed down to Sindh. They arrived in October and November, and returned again in April, taking back indigo, chintzes, white cotton cloths, shoes, and weapons, particularly shields from Derá Ghází Khán, which appear to have been held in considerable repute. The chief imports were *gur* (a coarse kind of sugar), some intoxicating drugs; and small quantities of *barak*, a cloth made from camels' hair, and the fine wool or *pashm* of Afghánistán, and small quantities of fruit, chiefly dry. Other Caravans or Káfilahs which came from Kandahár by Quettah or Shawl, and the Pishín valley by way of Harrand, used to bring down very fine oxen for the Seikh artillery and for general sale, together with goats, a few sheep, horses, carpets, and dates of a superior quality. These again used to take home with them, quantities of silks, white and colored cotton cloths, shoes, steel goods, and other articles, but they have, since the annexation of the Panjáb, been stopped by the robber tribes of Roh, who used to receive handsome presents from the Názims of Multán as the price of forbearance. The transit duties now are insignificant.

* This map has not been received.—Ed.

On a new Lagomys and a new Mustela inhabiting the north region of Sikim and the proximate parts of Tibet.—By B. H. Hodgson, *Esq., B. C. S.*

I have just obtained from the northern region of the Sikim Himalaya and the proximate part of Tibet some fine Mammal specimens, among which are two species which seem to me new, and the rather in that I have several samples of each species in very fine condition inclusive of the sculls. I subjoin a summary description of both.

Mustela Témon, nob.

Témon of the Tibetans.

This species is $9\frac{1}{2}$ inches long from snout to vent and the tail is $6\frac{1}{2}$ more. Its fur is short, soft and straight, being scarcely longer on the tail than on the body. The colour is, above and laterally, with the entire tail, brunnescent fawn; below, entirely pale pure yellow save the head and margin of the upper lip, which, as well as the limbs, are canescent; the last, however, with more or less of a brownish tint to the front or externally. The tail is $\frac{2}{3}$ the length of the animal. The fur is $\frac{3}{8}$ of an inch long and very fine. The dimensions are as follows:

Snout to vent,	0	9	$\frac{1}{2}$
Head,	0	2	0
Tail and hair,	0	6	$\frac{1}{2}$
Tail less hair,	0	5	$\frac{1}{2}$
Ears,	0	0	$\frac{3}{4}$
Palma and Nails,	0	1	$\frac{1}{8}$
Planta and Nails,	0	1	$\frac{1}{2}$

Lagomys Curzoniæ, nob.

Abra of the Tibetans.

My specimens were procured in the district of Chumbi. They are three in number and in fine preservation and high state of fur. They are quite alike in size and colour and demonstrably mature from the state of the teeth. They measure $7\frac{1}{2}$ inches from snout

to vent and are of a murine fulvous colour, paling and canescent below and on the extremities. The fur is exceedingly soft, full, and smooth of two sorts, or woolly and hairy, but both of silken delicacy, internally dark slaty blue, externally fawn colour, more or less obscured and darkened by the internal colour. The dimensions are as follows:

Snout to vent,	0	7	½
Head,	0	1	¾
Ears,	0	0	¾
Snout to eye,	0	0	⅞
Eye to ear,	0	1	0
Palma and Nails,	0	1	⅛
Planta and Nails,	0	1	¼

This beautiful little animal is appropriately dedicated to the Hon'ble Mrs. Curzon.

Darjiling, April, 1857.

Report on the Proceedings of the Officers engaged in the Magnetic Survey of India.—By Robert Schlagintweit, *Esq.*

General Outline of the Route.

I left Rawul Pindi in the Punjáb accompanied by Mr. Monteiro and the draftsman, Eleazar Daniel, on the 18th December, 1856, and travelled by Chukowal and across the Salt Range to Pind Dadan Khan.

I passed through the Salt Range by slow marches, which enabled me to examine its remarkable structure and I made a halt at Keurah, one of the principal Salt Mines, which gave me the opportunity of visiting the Mines and taking a series of observations in them.

Through the kind assistance of C. C. Smyth, Esq. Deputy Collector, at Newrah, I succeeded in making in a short time a pretty complete collection of the different kinds of Salts and Fossils.

From Pind Dadan Khan I continued my journey across the different Doabs of the Punjáb by Shapore and Jhung to Mooltan, where I arrived on the 4th of Jaunary, 1857.

I remained there till the 12th January, chiefly occupied with Magnetic and Meteorological observations. Excursions were made to the old bed of the Ravi and to the Chenáb, where I made detailed hydrographical observations.

I proceeded from Mooltan across the Ghara or Sutlej to Bhawlpore and by Ahmedpore to Khanpore.

On this journey I had the opportunity of examining the borders of the desert which advances close to the Sutlej and to the Indus.

Having made from Chanpore an excursion to Mithancote on the right shore of the Indus, and returned to Khanpore, I marched by Naushera and Subgilcote to Sukkur in Upper Sind.

There and in its environs, (at Shikarpore) I remained six days, partly engaged in packing the collections made during my journey in the Punjáb, partly in taking a series of observations.

I left Shikarpore on the 17th February, 1857, and travelled by Sarkhana to Sewan along the right side of the Indus.

After having visited and examined the Hills near Sehwan, the hot springs at Sukki and the Manehar lake, I followed the Hill road by Chorla and Dumach to Kurrachi, which I reached on the 22nd February.

In Kurrachi all my collections (23 boxes) were carefully packed and arrangements made for their being shipped to Bombay.

Departing from Kurrachi on the 1st March I went by Satta and Mugribi across the delta of the Indus and across a portion of the run to Subput in Kutch and on the 14th of March arrived by Khora and Nukatranha at Bhooj, the capital of Kutch.

During my journeys I was accompanied by Mr. Monteiro and the draftsman Eleazar Daniel, (guide in the Quarter Master General's Department, Bombay,) formerly in my brother's establishment.

Mr. Monteiro was sent by me in a boat from Pind Dadan Khan to Mooltan and then to Sukkur and Kurrachi.

Besides making collections of Natural History he took very good hydrographical and meteorological observations with the instruments I had entrusted to him.

Eleazar Daniel, the draftsman, travelling constantly with me, was of great assistance in taking and completing observations, and

I beg to bring to the notice of Government the many and important services which Mr. Monteiro as well as Eleazar Daniel have rendered to my brothers and myself during more than two successive years.

Throughout my journeys during the past cold season I was most obligingly assisted by all the officers in the different stations, so that I was able to carry on my operations without any delay and to collect much valuable information and scattered observations.

I intend to leave Bhooj on the 17th March and to proceed by Rajkote and through Kattewar to Surat and Bombay, which I shall leave by the end of April so as to return to Europe in conformity with communications made to Government when leaving Rawul Pindi.

Magnetic Observations.

I was provided during my journeys with an universal Magnetometer, by Barrow, with which, however, only the declination and vibration could be ascertained with that accuracy and precision, which these delicate observations require.

My Magnetometer had been carefully compared at Rawul Pindi with the larger instruments of my brothers; but the absolute values though easily ascertained by a repeated comparison and by detailed calculations cannot be given at present with the full details.

The declination and horizontal intensity have been observed at the following localities:—

1. Shapore.
2. Mooltan.
3. Shikarpore.
4. Sehwan.
5. Kurrachi.
6. Bhooj.

Before my departure another set will be made at Bombay for comparison with the Bombay Observatory.

Meteorology.

Besides the daily registering of the temperature of the air, (dry and wet bulb) and the pressure of the air, whilst on the march, and a longer series of observations in all places where I halted for some time, particular attention was paid to the following phenomena:—

1. *Dew.*—The quantity of dew which fell at night time was directly and carefully measured in many localities by exposing and

weighing paper boxes filled with grass, sand and wool as described in a former Report. The increase of dew the more I went to the South was very considerable; repeated observations in the same places enabled me to ascertain also the variations of the quantity of dew.

There is very little variation in the daily fall of dew in the Northern parts of the Punjáb, but in localities close to the sea the variations were very great and even remarkable without direct weighing. The greatest variations of the fall of dew I observed near Kurrachi, where in one night scarcely any dew fell, whilst in the next the fall was excessive, although both nights were equally clear and serene.

2.—*Minimum temperature of the air.*

I was particularly interested to see at what time the minimum temperature of the air before sunrise takes place, and to enable me to fix the time of the minimum temperature with certainty, a thermometer was carefully put up and read from 5 to 5 in minutes, the observations being begun long before sunrise.

In the Punjáb and in Upper Sind, during December and January, the minimum temperature took place generally 30 or 35 minutes before sunrise and this temperature was exceedingly well-defined, never lasting more than a few minutes (confer Table A.) In Lower Sind and in Kutch, however, the time of minimum temperature is not so well defined; a uniform temperature lasts nearly from 20 minutes before sunrise up to sunrise, the very minimum being generally just a few minutes before sunrise.

A second depression of the minimum temperature after sunrise was never observed. Table A shows observations on the minimum temperature in the Punjaub, and Table B in Sind and Kutch.

TABLE A.

JHUNG, 1st January, 1857.		MOOLTAN, 11th January, 1857.	
Minutes before Sunrise.	*Temperature*	*Minutes before Sunrise.*	*Temperature.*
60	3·4° cent.	55	5·8° cent.
50	3·4	50	5·4

Minutes before Sunrise.	*Temperature.*
45	3·3
40	3·2
35	2·9
30	3·0
25	3·0
20	3·1
15	3·2
10	3.2
5	3·2
Sunrise,	3·2

Minute before Sunrise.	*Temperature.*
45	5·4
35	4·7
30	4 3
20	4·6
15	4·6
10	4·6
Sunrise,	4·6

TABLE B.

SUBPUT IN KUTCH, 11th March, 1857.

Minutes before Sunrise.	*Temperature.*
3°5	11·8° cent.
30	11·8
25	11·7
20	11·6
15	11·2
10	10·6
5	9·8
3	10·4
Sunrise,	10·7

The minimum temperature of the air varies much in the same places, and whilst for instance I once observed in Mooltan a temperature of nearly 0° in the morning, the lowest temperature on the next was 6° and even 7° centigrade. These variations are chiefly produced by clouds, which modify the radiation.

During the months of December and January there were very few days quite cloudless (only three in January).

The weather was very variable between the 20th January and 1st February, during which time some heavy showers fell, which made the temperature of the air throughout the whole day uniformly cool.

During this rainy period the maximum temperature never reached more than 20° centigrade and on one day it only rose to 16·5° cent. a temperature which is considered very moderate even in Europe. On the 12th February this cold and agreeable weather suddenly ceased, and was followed by a surprising increase of temperature. The maximum temperature generally reached 30°, even 34° cent. strongly contrasting with the temperature experienced but a week before.

The climate of the Punjáb during the cold season, resembles much more the climate of the North West Provinces than that of any other part of India, but has nevertheless its strongly marked peculiarities.

The following material differences are found when we compare the cold season of the Punjáb with that of the North West Provinces.

1. During the cold season the mean daily temperature of the Punjáb is much lower than in the North West Provinces. The maximum temperature of the Punjáb, as well as the minimum temperature is considerably lower; the extremes of temperature are much greater in the North West Provinces than in the Punjáb.

2. In the Punjáb we find a moderate and very gradual increase of temperature from sunrise up to 12 and 2 o'clock, whilst the increase of temperature in the North West Provinces from sunrise up to 2 o'clock amounts sometimes to 28° C.

3.*—*Temperature of the ground;* the observations on the temperature of the ground from the surface down to a depth of 3 Meters and more were regularly continued with the instruments described in our former Reports.

The following table shows the temperature of the ground in different localities from the surface down to greater depths.

The temperature of the surface contained in this Table is the maximum of the temperature observed on those days.

* This 3 is consecutive with 2 in page 211.

Place of Observation.	Date.	Surface.	0.3 Meters above Surface.	Meters. Meters below surface.			
				1	2	3	5
		c.	c.	c.	c.	c.	c.
Chubouval, ...	20th Dec.,	27·6	12·0	17·4			
Kewrah, ...	23rd „	32·0	17·4	20·6	21·6		
Shapore, ...	26th „	35·2	13·5	20·5	24·2		
Jhung, ...	1st Jan.,	36·0	15·4	17·7	18·6		
Mooltan, ...	4to12th „	36·0	14·5	19·4	23·4		28·2
Khanpore, ...	22nd „			16·4	21·1		
Naushera, ...	24th Feb.,	20·0	14·5	18·9	22·2	25·5	
Sukkur, ...	25th „	37·0	18·3	21·6	21·6		
Kurrachi, ...	26th „	48·0	17·4	25·3	25·5		
Mugribi, ...	8th Mar.,	50·0	17·5	27·2			
Goon in the Runn,...	10th „	52·0	27·5	26·5	26·8		
Subput, ...	12th „	54·0	25·0	24·0	24·1		
Bhooj, ...	26th „	55·0	31·4	28·9	28·2		

This Table evidently shows a great increase of the temperature of the ground the more we advance to the South; the increase is especially rapid between Upper and Lower Sind (Sukkur and Kurrachi.)

There seem however to be great irregularities in the temperature of the ground, the increase being not strictly proportional to latitude or to isothermal curves of the air.

The irrregularities in the temperature of the ground are chiefly produced by the variations in the quantity of water contained in the ground, and places in which water is found close underneath the surface have a colder temperature of the ground than localities where water can be obtained only at a greater depth.

The depth of wells was therefore constantly registered, and observations were made to ascertain the quantity of water contained in the ground by weighing samples of earths of different depths as soon as they were taken out. These samples, after being carefully dried, were weighed again and thus the amount of moisture could be calculated.

Jungles also tend to cool the temperature of the ground, and I think, that, when we have the opportunity of comparing the temperature of the ground with depths of wells, with jungles, &c. many striking facts will be found to prove that irregularities of the tem-

perature of the ground are chiefly caused by jungles (in cooling it,) or dry soils (in heating it.) The temperature of the surface of the ground in the Punjáb was never found to reach 40° it is therefore considerably lower than in central India and the North-Western Provinces, where I had often found 45° and even 50° Cent. as the max. temperature of the surface.

Coinciding with the lower temperature of the ground is the fact that in the Punjáb a thermometer with blackened bulb rises (put on black wool,) but very little when exposed to the sun's rays, whilst I saw it rising in Sind to 77°, in Leh in Ladak, elevation 11,800f., it rose on the 8th July to 96° Cent. 8 degrees more than the boiling point of water at this height.

Hydrographical observations.

Careful observations were made for ascertaining the discharge of rivers, their temperature, the form and height of their banks, etc. Observations of the breadth were made by long base lines and triangulations.

In order to make accurate observations on the depth and velocity an anchor was used, which I carried with me for the purpose.

The discharge was measured for the following rivers:—

Jhelum at Pind Dadan Khan, Jhelum near Shapore, Chenáb near Jhuug, Ravi at Pasi Shah, Chenáb at Mooltan, Sutlej or Ghara at Bhawlpore, Indus at Sukkur, Indus at Tatta and the different branches between Tatta and Sukput.

In all these rivers a series of observations was made to ascertain the mean velocity directly.

Large (bamboo) sticks, weighed at one extremity with a bag containing sand or stones, whilst a bladder was fastened to the upper end to prevent their sinking, were floated vertically.

The temperature of the Punjáb rivers was surprisingly cold. The banks of the Punjáb rivers are exceedingly low, if compared with those of the rivers in Hindostan proper, the Ganges, Jumna, Nerbudda, Tonse, &c.

I was enabled to collect, whilst travelling along the shores of the Indus, many interesting data on the inundations of the Indus in 1856.

Geology.

The greater part of the plains of the Punjáb is filled with clay, which generally abounds with shells, not only on its surface but also at greater depths.

The thickness of the clay is very different in different localities, it very often is found to be only 6 feet deep, and under it sand is found resembling the sand of rivers. In other localities it is more than 20 feet thick with a layer of sand only a few feet deep, under which clay is met with again.

No shells are to be found in the sand, but as already mentioned, they abound in the clay.

I especially endeavoured during my journeys in the Punjáb to collect shells from the surface and greater depths, samples of sand, of sands of rivers, &c.

I had an opportunity of obtaining numerous and well preserved specimens of fossil shells in Sukkur and Rori in Upper Sind, and made, assisted by the draftsman, Eleazar, a large collection of shells and petrified wood near Sehwan and in the hills on my route down to Kurrachi.

I hope that these collections combined with the observations, taken on the spot will render it possible to ascertain with accuracy the age of the formation, but it would be premature to venture an opinion before a decided examination has been made.

There are several hot springs in this range of hills, and I had the opportunity of visiting those of Sukki near Sehwan and of Mugger Pir near Kurrachi.

In both localities the quantity of water which issues, is pretty considerable, and is extensively used by the natives for medical purposes.

The temperature of the springs at Sukki which take their origin three miles west of Sukki is 41·2° Cent., that of Mugger Pir, close to the "Alligator Tank," is exactly the same 41·2° Cent.

Bhooj, in Kutch, 16th March, 1857.

Description of a new Indian Pigeon, akin to the 'Stock Dove' of Europe; with notices of other COLUMBINÆ.—*By* EDWARD BLYTH.

In no other group of birds is the difficulty of discriminating between *species* and *permanent varieties*, whatever latitude may be allowed under either denomination, so great and so constantly recurring as in sundry genera of Pigeons. And yet each race, however slightly distinguished from certain other races, is remarkably true to its particular distinctive characters, wheresoever it be found; and it remains to shew that any gradations or transitions occur from one to another, which might not be readily accounted for by intermixture, where such cognate races meet. The numerous permanent races (considered by the Prince of Canino and others as *species*) affined to TURTUR RISORIUS, or to T. AURITUS, afford ample exemplification; and we are unaware that any of these have been known to interbreed one with another. Moreover, so far as has been observed, it would seem that the voice or *coo* differs appreciably in each race, just as the notes of other proximate but distinct species of birds do, in general, to a notable extent—as familiarly exemplified by those of the British PHYLLOSCOPUS TROCHILUS and PHRUFUS, and of many others that might be cited.

In Europe, three kinds of wild Pigeon are familiarly known, in addition to the wild Turtle Dove (*Columba turtur*, L.) They are the common 'Ring-dove,' Cushat, or *Ramier* (*C. palumbus*, L.), the 'Stock-dove' or *Columbin* (*C. œnas*, L.), and the 'Rock-dove,' 'Rockier,' or *Biset* (*C. livia*, Latham): the first two of which are foresters, habitually perching and roosting upon trees; and the third is chiefly an inhabitant of sea-cliffs and never alights on a tree. The first builds a platform nest which is supported by the lighter branches of trees; the second builds in the holes of trees (old pollard 'stocks' especially), and not unfrequently in Rabbit-burrows; and the third resorts to the cavities and deep recesses of precipitous rocks, and especially the caverns of sea-cliffs, where it nidificates in large societies. Each is the type of a generic or subgeneric group (*i. e.* a named division) according to the Prince of Canino; and each has its immediate representative or counterpart in India.

1. PALUMBUS. The 'Cushats.' In the W. Himalaya, a bird of this group is common, which differs so little from the European race that the two would probably blend, were they to inhabit together. The only distinctions consist in the neck-patch, which is large and almost pure white in the European Cushat, being much contracted and of a buff-colour in that of Asia; while the primaries also of the latter are more narrowly margined externally with white. Upon these slight distinctions, the Prince of Canino designates the oriental race P. CASIOTIS, and notes it from Chinese Tartary. He also remarks that the Cushats of Algeria have the white neck-patch more extended than in the European race; and distinguishes another and better-characterized race, from N. W. Africa, by the name P. EXCELSUS.

The only other true Cushats known are from this country, *viz.* P. PULCHRICOLLIS, (Hodgson), from the E. Himalaya; and P. ELPHINSTONEI, (Sykes), from the Nilgiris and Malabar Ghâts,—of which latter the P. TORRINGTONII (*Carpophaga Torringtonii*, Kelaart,) can scarcely be considered more than a variety,* and was first indicated as such in *J. A. S.* XX, 178. Nevertheless, according to Mr. Edgar L. Layard, the late H. E. Strickland "at once pronounced it to be distinct" from P. ELPHINSTONEI. All will agree in admitting P. TORQUATUS, P. PULCHRICOLLIS, and P. ELPHINSTONEI as good 'species;' probably also P. EXCELSUS: but most systematists would prefer retaining *casiotis* and *Torringtonii* as 'permanent races' or 'varieties' of P. TORQUATUS and P. ELPHINSTONEI respectively. It will be observed that this is a mountain type as India; being wholly unknown in the plains, save P. ELPHINSTONEI rarely on the elevated table-land of the Dukhun, and perhaps the CASIOTIS may prove to be a winter visitant in the Punjab, occurring probably in large flocks.

There are two other fine Indian Wood Pigeons of the same *Columbine* type (as distinguished from the *Carpophagine* series of Fruit Pigeons); each of them being recognised as the type of a separate subdivision by the Prince of Canino. They are the DENDROTRERON HODGSONII, (Vigors), which is peculiar to the Himalayan forests,—and the ALSOCOMUS PUNICEUS, Tickell, of Orissa

* *Comptes Rendus*, tom. XLIII, 837.

central India, and also Ceylon, though seemingly more common in Arakan and especially the island of Ramri. These are mentioned merely, that it might not appear that they had been overlooked.

2. PALUMBÆNA, Bonap., founded on *Col. œnas*, L. (*P. columbella*, Bonap.), the British 'Stock Dove;' to which the Prince has since added P. EVERSMANNI, from western and central Asia: very like P. ÆNAS, but distinctly smaller, with black bill and yellow tip *(dertrum)*,—the colouring of the bill having doubtless changed in drying, as will be shewn presently. This should be the *Col* apud Meyendorff, from Bokhára; described to have the crou very pale grey, with all the feathers white at base, in which cords with our Indian species; and it is not unlikely to pro very same, migrating according to season. The true P. ÆNA bably co-exists with it in W. Asia; and the European bird is to be extensively diffused over N. Africa.

P. EVERSMANNI (?), Bonap. (If new, *P. œnicapilla*, n Smaller than P. ÆNAS, with wings and tail each 1 in. shorte difference in the length of tail being very conspicuous. Col much the same; but the croup and fore-part of the wings neath are of a *whitish-grey* (not pure white) in the Indian instead of being uniformly dark-coloured with the rest, as European 'Stock Dove.' The same vinaceous tint (whenc name *œnas)* prevails on the fore-neck and breast of both sp but in the Indian it appears also on the crown, which in the is pure dark ashy. The wings are similarly marked, except t our presumed new species there is less black upon the wingle the great alar feathers (including the tertiaries) are much les in colour. Length of closed wing 8½ in.; and of tail 4 in. on

Among some descriptions of birds sent for identification ten years ago by the late Major Boys, of the Bengal Caval find one of this Indian 'Stock Dove.' He gives the lengt fresh-killed male as 11½ in., extent of wings 24 in., and weight 4 dr. Mr. Selby states that P. ÆNAS "measures about 14 i and in extent of wing nearly 26 in." "The beak," remarks I Scott of Hansi, who has favored us with the specimen here de ed, "is of a yellowish colour, and as if translucent; but th pearance is only visible in the fresh bird, as it had disappeared

the specimen became dry.* The legs also had a distinctly yellowish tinge, instead of the red of the common Blue Pigeon; but this also soon disappeared." Major Boys describes the bill and cere as grey, the skin round the eye yellow; iris buff; and legs flesh-pink,—those of our common blue Pigeon being of a deep pinkish-red.

Of the habits of the race, Major Boys merely remarks, that—"These birds fly in flocks and *affect trees!*" When at Cawnpore, last year in May, I observed every evening a large flock of blue Pigeons to collect and roost upon some high trees within cantonments, and therefore not to be fired at; and having never observed the common Blue Pigeon of this country to roost upon trees, I was led to suspect that the birds in question were of a race of 'Stock-doves,' probably different in species from the European; a conjecture which seemed to be verified by the discovery of the bird now under consideration: but I am assured, upon good authority, that the COLUMBA INTERMEDIA, Strickland, does commonly roost upon trees, in which habit it would seem to differ remarkably from its very near affine the C. LIVIA of Europe and N. Africa.

Of the Indian 'Stock Pigeon,' Dr. Scott remarks—"Though I have been at Hansi nearly five years, I have never seen these Pigeons before; but others have seen them, and have assured me of their occurrence as a distinct race, different from our common Blue Pigeon which breeds in wells. Early in March there were hundreds of them about here; but they soon disappeared. They feed in the fields morning and evening, and roost in the day (and I suppose the night also) in trees, generally in the common *bábul* tree, called here the *keeker*. The natives distinguish them by the name *kummer kulla* or *kula;* the last word being the name of a colour.† To Europeans they are also here known as the 'Hill Pigeon;'

* In the dry specimen, the bill is black with yellow *dertrum*, as in the Prince of Canino's P. EVERSMANNI!

† In the chapter devoted to the rearing of Pigeons in the *Ayin Akbári*, a number of breeds or races are enumerated, concluding with the *Komeree* and the *Gowlah* (Gladwin's translation.) These names refer to the tame Collared Turtle-dove and to the common 'Blue Pigeon' of the country (or C. INTERMEDIA) respectively. The latter, indeed, is stated to be "a wild Pigeon, of which, if a few are taken, they are speedily joined by a thousand others of their kind."

though whether they came from the hills I cannot say." These Pigeons have hitherto been observed only in the N. W. of India.

3. COLUMBA, L. (as restricted to the 'Rockier' group of the major continent). Of this type, the Prince of Canino recognises several nearly affined races, some of which differ more or less in habit, as well as in the details of colouring. From certain of these races, all the numerous varieties of domestic Pigeons have undoubtedly descended.

The most unlike the rest is the fine Snow Pigeon of the Himaláya (C. LEUCONOTA, Vigors), which is confined to great elevations near the snow, and assuredly does not appear to have given origin to any domestic variety.

The European Rock Pigeon (C. LIVIA, Latham), according to the Prince of Canino, is found identically the same in Europe, Egypt, the whole Barbary coast, and thence on to Senegal and the Gold coast.* It is said to abound in the islands of Madeira and Teneriffe. Northward, it is common in the Hebrides, and in the Orkney, Shetland, and Faroe Isles; but in Scandinavia is altogether confined to the island of Runnesön, on the S. W. coast of Norway, where it breeds in great numbers.† According to Temminck, Japanese specimens do not differ in any respect. It also abounds along the rocky shores of the Mediterranean and Ægean (Italy, Sicily, Malta, Greece, &c.), and those of the Euxine and Caspian; evincing everywhere a decided and remarkable predeliction for the crevices and especially the deep caverns and recesses of sea-cliffs, even where the entrance is close over the water at the height of the tide: it penetrates further into such recesses than any sea-bird is known to do. It also feeds more on the tops of plants than the domestic races do habitually;‡ and small *Helices* are commonly found in its craw. Though rarely, if ever, inhabiting inland, unless somewhat domesticated, sundry old-established dove-cots have been stocked with it in various parts of Britain, where the race is maintained

* *Comptes Rendus*, tom. XXXIX, 1107.

† Nilsson, as quoted by Major Lloyd, 'Scandinavian Adventures,' II, 336.

‡ The British Cushat is a great devourer of turnip-tops, as remarked by Gilbert White.

pure; and, as thus observed, it shews no disposition to associate with the domestic breeds in neighbouring dove-cots, although considered to be the parent race from which the latter are mainly derived. Even when eggs taken from the inland colonies referred to have been hatched, and the young brought up by domestic Pigeons, these Rockiers have been known to quit their foster-parents, as soon as they could fly strongly, to rejoin their immediate relatives and progenitors. Another characteristic of the race is, that they like to breed in extensive societies; so that the large colonies of them soon absorb any stray birds even from a great distance.

In England, there is likewise a race of wild or semi-wild blue Pigeons, which maintains itself distinct, and (though numerous in individuals) continues as true to its distinctive colouring and all other characters as does the genuine Rockier, of which it is regarded as a variety. These birds frequent inland cliffs and large buildings; being also extensively reared in dove-cots to meet the demand for Pigeon-matches. They have invariably a speckled wing, each covert being marked with a black spot on each of its webs, in addition to the black bars of typical LIVIA. The scapularies also are thus marked; and the back indistinctly. The croup is pure white, as in ordinary LIVIA: and the race is chiefly remarkable for the *permanency* of its particular markings, and for commonly inhabiting much more inland than the true *Biset*.*

Another such race in Italy (a degree, perhaps, more different,) is indicated by the Prince of Canino by the name C. TURRICOLA, and it has also been received from Persia. The croup being of "a

* The same spotting of the wing is common among the Indian domestic Pigeons derived immediately from C. INTERMEDIA, and otherwise not differing from the pure wild race of the latter: but I know of no analogous wild or semi-wild race in this country, which presents this particular colouring as a constant distinction. Individuals or pairs so marked are here common among the tame flocks; with other varieties of colouring, as black, buff, pure white, pied, &c., and without variation in other characters or tendency to assume the peculiarities of the various 'fancy breeds.' These last manifest no tendency ever to return to wildness; their *domestication* being too complete: but tame Pigeons of some kind are said to have gone wild in N. America, a few pairs of them breeding along the highlands of the Hudson; and whether these 'feral' birds tend to assume an uniform and typical coloration, we have not learned.

pale blue-grey,"—whitish-grey (?), as in the Indian 'Stock-dove,'—"never pure white."

Another, again, is termed by him C. RUPESTRIS, from the mountainous and rocky parts of Songaria and Dauria (or Dahuria),—adopted from Pallas, but the particular distinguishing characters not specified.

C. SCHIMPERI, also, "which covers with its innumerable flocks the more desert plains of Abyssinia. It is stouter and more albescent than the common C. LIVIA."

Likewise C. GYMNOCYCLUS, Gray, from Senegal. "*Obscurior: orbitis nudis: rostro valdé robustiore.*"

Lastly, C. INTERMEDIA, Strickland, of India.* The common 'Blue Pigeon' of this country, which only differs from C. LIVIA by having the croup uniformly coloured with the back, as in the European 'Stock-dove,' and by a somewhat deeper and more uniform shade of ash-colour. Yet the purely wild birds continue true to this colouring, and no variation will be seen in the largest flocks of them, where unmixed with domestic Pigeons; but they most readily mingle with the latter, and scarcely require encouragement to fall into domestic habits. In the vicinity of Calcutta, the pure wild race can hardly be obtained, though domestic Pigeons in every ordinary flock (not of "fancy birds") which are undistinguishable from the wild, in company with others varying more or less in colouring from the type: but even at Benáres, we remarked a great assemblage of these birds, nestling in the innumerable nooks about the famous mosque of Aurungzebe, and sought in vain for any variation of colouring among them, and especially for the white croup of true C. LIVIA. Col. Sykes refers this bird to C. ÆNAS, and remarks that it is "the most common bird in the Dukhun, congregating in flocks of scores, and a constant inhabitant of every old dilapidated building." He saw "the same species on board ship on the voyage to England, brought from China:" and the Rev. J. Mason notes the occurrence of what he considers to be the same bird, wild in Burma. In Ceylon, according to Mr. Edgar L. Layard, "this species is extremely local, being confined to two places, 'Pigeon Island' off

* *Comptes Rendus*, tom. XLIII, 838.

Trincomali, and a rock of the Southern coast near Barberrya.* From these it makes incursions into the interior, and I have heard," he adds, "of specimens being shot on the great central road, about fifty miles from Trincomali." Dr. Jerdon remarks that "it abounds all over India, and is occasionally found in the more open spaces of jungles, especially in rocky districts, and in the neighbourhood of water-falls,—but more generally in the open country, inhabiting walls of villages, pagodas, wells, and any large buildings, and breeding chiefly in old walls." Major Tickell, again, notices it as "exceedingly common in Chota Nagpur, breeding in all the steep lofty rocks of that country." Lastly, Capt. Hutton states that "it is found in Afghânistán, where, as in many parts of India, it builds in wells and ruined buildings; the *Kazeezes*, or Artesian wells of Afghânistán, are sometimes crowded with them. They occur also in the Deyra Doon, and are known as the common Blue Pigeon. At Másuri, I have seen them only in the cultivated fields, low down on the sides of hills, in warm situations." Length 13 in. by 23 in. in breadth; and C. LIVIA is described as measuring 13½ in. by 22 in.: though it is doubtful if there be any real difference.

Upon other authority, we have been assured that the common Blue Pigeon of Afghânistán has the white rump of the European LIVIA. It is probably identical with the Kemáon bird next to be described; and both with the C. RUPESTRIS of the Prince of Canino.

The late Major Boys, a most experienced collector of Indian birds, whose description of the Indian 'Stock Pigeon' we have just verified, also distinguished a "Blue Rock Pigeon" which he procured at Háwulbágh in Kemáon. "This Pigeon," he remarks, "differs considerably from the common Blue Pigeon; particularly in its weight and size. It is in every respect much lighter in plumage. Length of a male 12¾ in., by 25 in.; weight 7 oz. 8 dr. Bill black, the cere grey; iris red; legs pink. Top of head, chin, and sides of face, ashy-grey. Back of neck and upper part of breast glazed metallic green. Bottom of neck metallic purple blending into ashy light grey on the belly. Flanks and vent light grey: wing-coverts and upper part of the back of the same colour. *Middle of back white.* Upper tail-coverts dark ashy-grey. Quills

* Resorting thus, it would seem, to sea-cliffs wherever the latter are available.

grey,—the shafts black,—darker near their tips. Second quill longest: outer webs darker than the inner. Some of the larger wing-coverts, those covering the *tectrices* [tertiaries ?], together with the 6 or 7 last tertiary feathers, bear a patch of greyish-black, which when the wing is extended forms two indistinct and somewhat curved bands. Tail dark grey at base, *broadly tipped with black*, and having between these two colours *a broad stripe of white* (wanting in the common C. INTERMEDIA.) Inferior coverts white, blending with grey towards the anterior margin of the wing. Length of tail 5 in. The quills (when the wings are closed) reaching to its tip. The exterior tail-feathers are pure white from their bases on the external web, finished off at tip with black; the inner webs being grey at base, as obtaining in the intermediary feathers."

Any collector who has the opportunity should endeavour to verify this particular race, the *habitat* of which would seem to be intermediate to that of the 'Snow Pigeon' (C. LEUCONOTA) and that of the 'Common Blue' of the plains of India: the white rump alone would readily distinguish it from the latter.

Note on the Green Pigeons of Ceylon. The *Columba pompadoura*, Gmelin, founded on pls. XIX and XX of Brown's 'Illustrations of Zoology' (1776), has long been sought to be verified; and at length, it would appear, successfully by the Prince of Canino, in a small species, as originally described, of the size of *C. olax*, Temminck.* Consequently, the TREERON MALABARICA var. *pompadoura* of Mr. Layard's catalogue is a distinct bird, which may bear the specific name FLAVOGULARIS, nobis. It is very like TR. MALABARICA, Jerdon, being of the same size as that species, with an equal development of the maronne colour upon the mantle of the male; but is readily distinguished by its yellowish-green forehead, pure yellow throat, and by having no buff patch on the breast of the male; it is also further remarkable, that whilst the male of TR. MALABARICA has the usual deep cinnamon-coloured lower tail-coverts, that of TR. FLAVOGULARIS has them green with broad whitish tips as in the female, and as in both sexes of TR. CHLOROPTERA of the Nicobars. TR. POMPADOURA is a much smaller species, with the quantity of maronne colour on the mantle of the male greatly reduced, and

* *Comptes Rendus, tom.* XXXIX, 875.

cinnamon-coloured lower tail-coverts, as usual in the males of this genus. Following the Prince of Canino's classification, the following species of TREERONINÆ inhabit the island.

1. CROCOPUS CHLORIGASTER (Blyth).
2. OSMOTREREON BICINCTA, (Jerdon),
3. „ FLAVOGULARIS, Blyth.
4. „ POMPADOURA, (Gmelin).

The first and second being common to Ceylon and the mainland of India; and the third and fourth peculiar to the island, so far as known at present.—E. B.

Notes on Jumeera Pât, in Sirgooja.—By Capt. R. T. LEIGH, *Senior Assistant to the Commissioner of Chota Nagpore.*

Jumeera Pât is situated in Sirgooja, about nine miles within the boundary line of that province and the district of Chota Nagpore. It is about 100 miles nearly due west from the station of Chota Nagpore, and lies between 23° 15′ and 23° 40′ N. Lat. and 4° and 4° 30′ W. Long. from Calcutta. Sherghatty is situated about 100 miles to the N. E., and Mirzapore about 160 miles to the N. W. To the north is Palamow, and to the south Oodeypoor.

Jumeera is the name of a small village and the word "pât" means a "plain," or, "table-land."

The road from Chota Nagpore is good as far as Joormoo, which is about eleven miles from Jumeera Pât. In some few places it is rather difficult for wheeled-conveyances, the banks of some of the nullahs being very steep. Such parts might be made quite practicable for carts, in the dry season, when the quantity of water in the nullahs is very small. In the rainy season these streams rise considerably and are not passable by carts. About a mile beyond Joormoo the first ghaut occurs, the ascent of which for a short distance (rather less than quarter of a mile perhaps) is very steep, and quite impracticable for wheeled-carriages. After reaching the top of this ghaut, the road is more or less hilly until within a short distance of the village of Korndah. A large tree on the left hand

side of the road, ascending the Joormoo ghaut, marks the boundary of Sirgooja and Chota Nagpore. Korndah is situated at the entrance of a beautiful and well-cultivated valley, and at the foot of hills. This is a very pretty spot, and the view of the Koosmee valley from the hills above is very fine. A stream of good, clear water flows close by the village, which is about seven miles from Jumeera. The road from Korndah to Jumeera winds through hills, the ascents and descents of which are not very steep, although not practicable for carts. There is a good deal of tree and bush jungle on the road from Joormoo to Jumeera, and the country appears to be cultivated only in occasional small patches. With the exception of Korndah, there are only two or three small hamlets on the road from Joormoo.

A person can travel in a palkee from Joormoo to Jumeera, and by reversing the palkee when ascending the very steep parts of the road, little trouble or inconvenience is experienced.

On reaching the village of Jumeera, the bungalow which has been built for the Junior Assistant Commissioner in charge of the Korndah Sub-division, is seen on high ground about one mile and a half in advance. A slight ascent brings us to the house, and we now have evidently reached the apex, no higher point of land being visible in any direction. Here is a fine and extensive table-land, free from jungle, with the exception of some low scrubs on the more sheltered slopes. With the exception of two topes of "Saikwa" trees, and a few mangoe and peepul which grow near the village of Serandag (about half mile from the bungalow) the "pât" is remarkably bare of trees of any kind.

This spot is 3,200 feet above the level of the sea. I am unable to speak as to the extent of the table-land, but I may safely say, from what I have seen, that it must stretch to many miles. About 300 yards to the south of the bungalow we come to the brow of the hill, from which a beautiful view of the Koosmee valley is obtained, beyond which are the hills of Kooreea and Sirgooja. On the north of the bungalows a spur of the hill runs out to the extent of about one and half miles in length and quarter of a mile (or rather less perhaps) in breadth, sloping down on three sides by a slight descent to a fertile and extensive valley. This spur appeared to me to be

the most eligible site for the sepoys' lines and amlahs' houses, which were accordingly built there.

The soil on the spot on which the bungalow is situated, to the depth of about two or three feet, is a rich black mould, below which is red gravel. In endeavouring to sink a well, which we tried in three places, this gravel appeared to increase in hardness and become more difficult to dig the lower the well was sunk, the colour of the gravel also became of a deeper red. After digging to the depth of about thirty-five or forty feet we came to rock which obliged us to discontinue the work, as the men employed did not understand blasting; no water was obtained. The soil generally, except where the bungalow is situated, is a red, light earth. From the appearance of the slopes of the hill, which are very rocky, as also from the result of our endeavours to sink a well, I should say that the hill on which the house is situated must be one mass of rock beneath.

For water we were dependent on springs, which issue from the sides and at the foot of the hill, it is of good quality, and the springs did not fail during the hot weather, the only drawback being the distance which the people were obliged to go to fetch it, the nearest spring being about half mile from the house. In the rainy season the flow of water from these springs was of course considerably increased, and fresh ones also burst forth. A "bund" had been constructed in the gorge between two hills during the time my predecessor (Mr. A. R. Thompson, C. S.) was in charge of the sub-division, but it had been partially destroyed in the rainy season of 1855, the rush of water from the hills in the rains being at times great, I doubt if a "bund" would stand; unless strongly and scientifically constructed, which would be an expensive work. The greatest convenience, if feasible, would be a couple of wells, one near the house, and the other near the lines.

With regard to climate, I annex a register of the thermometer, the accuracy of which may be depended on, as I noted it daily. In the hot season, as soon as the sun set, the air became cool and pleasant, and the nights were always cool—natives sleeping in the verandah of the house, at night, used warm coverings, even in the hot season. I had neither punkahs nor tatties during the time I was there, and I found that by keeping the doors shut and the

room a little darkened the heat during the day was not very oppressive. The thermometer in the house did not, I think, range higher than 84° or 85°. A strong N. W. and W. wind prevails during the hot season. The rains set in at the end of May, with thunder-storms from the N. W. after which the prevailing wind was from the S. and S. W. It very seldom blows from the E. After the rains had set in there was very little variation in the thermometer from that noted in the beginning of June; and until I left, in the middle of August, I never experienced that "mugginess" which is usual in the plains at times during the rainy season. Not having had a rain-guage, I am unable to speak as to the quantity of water which fell, but I think that, although the rain was at times very heavy, yet it was not so heavy or continuous as at some of the stations in the Himalayas. Perhaps the few trees on the "pât" may account for many of the clouds passing over without discharging their contents. At times there was a good deal of mist.

I enjoyed good health during the time I was there, and the sepoys and office people, who had been with me from the commencement of our residence there, were generally speaking healthy. Some cases of fever occurred, but as the sepoys' lines and the amlahs' houses were only barely finished when the rains commenced, they were of course damp, and to this may be attributed some of the cases of fever. Had the houses been dry, and had the people been able to obtain a regular supply of good food, I think that there would have been less sickness. It was, however, very difficult to procure supplies of good rice, doll, ghee, &c., as the Buniahs, who live in the villages below, have a great dislike to coming up to the "pât" during the rains, and my efforts to establish a bazaar failed. The natives of the adjacent villages appear to be a very poor race, occupied in cultivating their land, from which they raise a coarse kind of rice ("gorah dhan") and "goondlee" (millet), &c. It was with difficulty that they were induced to come and labour in building the lines.

From the experience I have had during a residence of five months (from the end of March until the middle of August 1856) at Jumeera Pât, I should be inclined to pronounce favourably of the climate. There is almost always a fine breeze blowing there, and in

the cold and hot weather a very high wind from the N. W. and W.

The route by which I marched from Chota Nagpore is about 116 miles, there is another and more direct road viâ Lohardugga and Kotam (about 100 miles); but there is a very steep ghaut near Kotam, and the road is in many places very hilly, and passes through a good deal of jungle.

The face of the hill to the south of the bungalows, is covered with bush jungle, there are few trees of any size. The valley at the foot of this hill appears to be quite free from jungle, partially cultivated, and containing a few topes of mangoe trees. Having had occasion to go three or four marches into Sirgooja, in a S. W. direction, I observed that we descended two or three ghauts, but made no ascents. The country is very beautiful, from the intermixture of extensive and fertile valleys and well wooded hills. Game of all descriptions, large and small, abounds.

Chota Nagpore, 13*th Oct.* 1856.

Register of Thermometer, at Jumeera Pât, placed in an open verandah to the North.

March, 1856.	Before Sunrise.	At 2 P. M.		April.	Before Sunrise.	At 2 P. M.		May.	Before Sunrise.	At 2 P. M.		June.	Before Sunrise.	At 2 P. M.	
26	62	75		1	74	84		1	70	81		1	70	78	Rain.
27	62	80		2	74	86		2	72	86		2	70	79	
28	62	79		3	73	87		3	74	90	Rain	3	70	79	Do.
29	68	82		4	76	86		4	73	81		4	71	77	Do.
30	70	83		5	72	82		5	72	86	Rain	5	72	79	
31	72	83		6	70	84		6	74	88	Do.	6	71	79	Do.
				7	74	87		7	74	88		7	72	78	Do.
				8	74	89		8	76	90		8	71	75	Do.
				9	77	91		9	78	90					
				10	78	92		10	78	92					After this date I did not note the thermometer, but up to the time I left (18th August) there was little variation from that marked in the beginning of this month, if any thing, it became a little colder.
				11	74	90		11	80	92					
				12	74	92		12	80	94					
				13	76	90		13	78	94					
				14	69	86		14	78	94					
				15	70	86		15	80	92					
				16	71	87		16	73	90					
				17	71	88		17	73	86					
				18	74	91		18	71	86					
				19	76	92		19	75	88					
				20	76	93		20	76	90	Rain.				
				21	76	90		21	74	89	Do.				
				22	74	91		22	76	86	Do.				
				23	76	93		23	72	80					
				24	76	94		24	70	82	Rain				
				25	76	92		25	70	78					
				26	78	86	Rain	26	70	82	Do.				
				27	70	82	Do.	27	70	82	Do.				
				28	68	80		28	72	84					
				29	70	76	Rain and hail.	29	74	84					
				30	70	74	Rain.	30	74	82	Do.				
								31	68	74	Heavy rain.				

PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL,

FOR MAY, 1857.

At a Monthly General Meeting of the Asiatic Society held on the 6th instant,

The Hon'ble Sir James Colvile, Kt., President, in the Chair.

Presentations were received—

1. From J. Robbins, Master of the *Sumroo*, a piece of limestone from Fort Alexandria, Sebastopol, being the material of which the original Malakhoff, Constantine, Alexandria and other Forts were constructed. Also a Russian bar shot and a shell weighing 118 lbs. from the same place.

2. From Mr. H. Tucker, Commissioner of Benares, a copy of the map of the village in which the ruins of Sarnath are situated.

The following gentlemen, duly proposed and seconded at the last meeting, were balloted for and declared elected: Dr. W. C. B. Eatwell, Rajah Prásunonauth Rái Bahádur, of Degaputtie, Rajshye.

The election of the Venerable Archdeacon Pratt as a member of the Council in the place of Dr. Walker, was confirmed.

The Council submitted a report by the Committee of Natural History on the state of the Museum, together with the minutes of the Council in reference to it. The Council recommended that the suggestions contained in the report be adopted, and proposed the following resolution.

"That the Council be empowered to enter into a communication with the Government on the subject of the foundation at Calcutta of an Imperial Museum, to which the whole of the Society's collections may be transferred, provided the locality,

the general arrangement, and management be declared on a reference to the Society at large to be perfectly satisfactory to its members."

This resolution having been put to the meeting by the Chairman, considerable discussion ensued, in the course of which Major Thuillier suggested that the words "except the Library" should be inserted after the word "collections." This suggestion was adopted. Subsequently Captain C. B. Young moved as an amendment, seconded by Baboo Rájendra Lál Mittra—

"That the consideration of the resolution be adjourned to the next meeting."

This amendment was put to the vote and lost, and the resolution, as amended by Major Thuillier, was then carried.

The Council announced that they had reconstituted a Committee of Meteorology and Physical Science, consisting of the following members:—

Major R. Strachey, the Venerable Archdeacon Pratt, Major H. L. Thuillier, Baboo Radhanauth Sikdar, Dr. Von Liebig, and H. Piddington, Esq.

Recorded.

With reference to the Stacy collection of coins, the Council reported that the subscriptions promised amounted to Rs. 2,880, of which Rs. 1,735 had already been realized, and that Captain Wroughton having agreed to reduce the price of the collection from Rs. 5,000 to Rs. 4,000, an additional sum of Rs. 1,120 only was required to complete the purchase. They therefore requested authority to advance for this purpose a sum not exceeding Rs. 1,200, so soon as all the promised subscriptions have been realized.

Granted.

Communications were received—

1. From Mr. Secretary Young, forwarding with reference to the correspondence which took place in 1853 and 1854 between the Government of Bengal and the Society regarding the preservation of the ruins at Gour and Purrooah from further decay and destruction, copy of a letter on the subject from the Board of Revenue, from which it appears that the Government of Bengal had made an offer to purchase such of the ruins as were really worth preserving, but that the terms demanded by the zemindars

were so unreasonable that the Lieutenant-Governor was precluded from acceding to them.

2. From Mr. B. H. Hodgson, enclosing a paper for the Journal, being descriptions of two new species of mammalia, viz., a Lagomys and a Mustela.

3. From Mr. Freeling, submitting a note on the collection of coins in the Society's Cabinet.

The note was read by the Secretary as follows :—

"The coins in the Society's Cabinet were in a state of some disorder.

"My first effort was to class them, throwing all of one series together, and then to separate the worthless from the good. This I have done, and although the space in the drawers forbad any precise arrangement even had the generality of the coins merited such trouble, they are now in trays (which are to be converted into boxes), roughly classed, and the name of the series to which they belong legibly written on them. I have also when discoverable, added the names of the donor on the wrapper of the coins themselves.

"In the *wooden* trays are displayed the Guptas, the gold and silver Roman, and the silver Greek, Bactrian and Arsacidan. There are also two trays of copper Roman arranged previously, with which I did not meddle. There is also a separate drawer with a few gems, seals, curiosities, &c., with some presentation medals which scarcely hold a place among the coins themselves.

"With the contents of the cabinet I was much disappointed, though this may be, and probably is, owing to the loss sustained, when all the more intrinsically valuable specimens were stolen in 1844. I was also surprised to find how various the series are, the Roman and the Norwegian being far the largest and most perfect of any. There are several batches of Indian copper and lead, which would be interesting were the locality known; but at present being entirely unidentified and most illegible, they are utterly worthless. This point should especially be borne in mind in laying by all future presentations: when a collection is sent, such memo. of the collector's residence is of little importance, but when a whole trove, or a single coin is forwarded, information of where it

was found, may render very valuable what is otherwise mere old copper.

"Of Indian coins the Bactrians should have the first place, but for such an extensive and interesting series it is the worst represented of any; in silver there is only a drachma of Demetrius. a hemidrachma of Zoilus, 2 of Hormœus, 1 of Dionysius and 5 of Menander. None of them are in particularly good preservation, though the Dionysius is I fancy very rare.* The copper are as poor as the silver, most being of the commonest types, and in poor preservation. The aid of friends in the Punjab, or possessing any duplicates in their collection is much needed to render the series at least what the Asiatic Society ought to possess.

"Of Indo-Scythic gold there is but one, of Overki as A. A. XIV. 2, and not by any means a fine specimen; the copper too are inferior, and a good set of these would be a great addition to the collection.

"Of Arsacidan there is one large silver and 11 of the ordinary smaller size. It would be very desirable to get these named and assigned by any one conversant with the series.

"There are 5 Greek tetradrachms, 4 of Ptolemy and one of some other monarch; there are also 2 silver of Alexander the Great, but Mr. Thomas doubts their being genuine, apparently with too good reason.

"It is in Roman coins the Society is peculiarly rich, and a reference to the earliest numbers of the Journal would probably enable any numismatist easily to re-arrange and identify the specimens there described. I had no time to do it myself, so have merely put all these together. Some appear very fine specimens, and there are 13 silver besides 8 beautiful gold, these last presented by General Cullen from Travancore.

"Of the Hindoo coins, the Guptas claim the first attention, and here again though the number is considerable, the types are few and, of the real Gupta series, possessing little interest. There are a few good and interesting copper ones presented by Captain Hayes

* Not having Cunningham's plates by me just now, and being pushed for time, I am unable to refer to the figures as I could have wished.

of Lucknow, and in gold there are 5, one of Chandra II, as in Ar. Antiq. XVIII. figure 4, by Captain Hayes, one of Samudra fig. 6, one uncertain, another apparently the 4th variety of Kumara at page 501 of Thomas's paper in the Journal, Vol. 24, and one of Kumara A. A. fig. 12. This last, however, is of most doubtful appearance, and I should say it was a forgery. There are also 3 later imitations. Besides these there is a batch presented by the Government, N. W. P. in February, 1856, from Goordaspore, consisting of 2 specimens of Kumara with the common, Mahendra device, and 11 of Chandra II. as in Captain Hayes' coin. Of these none are very fine, and the type of Chandra is so very common, that I should strongly recommend 7 of the 11 being sold to natives, who purchase these Guptas eagerly, and about 100 Rs. would, probably be realized; so many specimens of one sort are of no value, in an antiquarian point of view, and being so common, I doubt an exchange of these with other collectors being practicable, I have therefore left this lot in a separate paper, with the four I would keep divided off from those of inferior value.

"There are, however, several others allied to this set, and of much interest, being those presented by Mr. F. L. Beaufort, and found in Jessore. They were figured in plate XII. of Vol. 23 of the Journal. Of fig. 10 there are 4 and one somewhat different, of fig. 11 but one, and 15 of fig. 12, of these last some might most advantageously be exchanged for other coins needed by the Society, and as they are not a common type, Major Abbott's cabinet being the only place elsewhere that I have seen them, I doubt not many collectors would be glad to do so."

Of Boodhist coins there are several, some of much interest, Captain Hayes having contributed many of the cock and bull series named and classed, also some of the cast square, elephant, and tulsi type, of which there is also another batch. The most interesting of the Boodhist, however, are the silver punched coins, of which, common as they are (the collection itself boasting 4 different lots), there are some very good, with new symbols and devices on them, and in fine order. Many of these might furnish fresh illustrations for a paper on Boodhist emblems, and although from absence of any trace of their *local* the number might advantageously be reduced, great care should be taken in discriminating those to be rejected.

There are two papers of the coins figured plate XX. of Vol. XI. of the Journal as Ceylon coins, in very fine order, and I doubt not a good set might be made out of them, on their legends being carefully read; these were given by Mr. C. B. Skinner, in June, 1851. In a separate lot are a quantity of coins having a close apparent affinity to these, which I should also have considered as Cingalese, but for a small second paper-full which are said to have been found near Madras.

Mr. T. Oldham, in February, 1856, presented a quantity of large and small Arracan coins, very curious and quite unlike any other Indian coinage. Several strings contain the currency of China, Japan, &c., some of the latter being exceedingly grotesque.

The Mahometan pieces may be divided into those of the Pathans of Delhi, the Pathans of Bengal, the Moguls, and the coins of Ghuzni, Khwarism, &c.

Of these last mentioned, there are a fair number, including two gold of Alaeddin Mohamed Shah; they have chiefly been classed by Mr. Thomas, who has not only named them, but in many instances written the legend on the wrapper. I would urge that these be carefully transcribed into a book, as the character being a difficult one, if any of these papers be lost, it may be long ere they are replaced, whereas many might be able to assign the right coin to the right legend, though not sufficiently versed in the series to themselves decipher the whole of the somewhat indistinct margins. The same remark applies to the coins of the Sassanian dynasty and Arab Governors of which the Society has several, and which are even more cáviare to the general multitude than the early cufic abovementioned.

In Delhi Pathans there is little to be proud of, though two broad pieces of Mahomed ben Sam, a new type of Mahomed Shah and a silver Rizia are all valuable, especially the last. Of this series I have made a concise catalogue with reference to "Thomas's Pathan Sovereigns," which will help any one anxious to increase the Society's possessions in this line.

In Bengal Pathans the cabinet is rich, but as I hope to furnish the journal with a separate paper on this topic, I forbear saying more of these at present.

The Moguls are very poor indeed, there being nothing of any value, save 3 Noorjehans, one certainly very fine and perfect. The rest are either Akhbars, Jehungirs or Shah Jehans, all of most common type, and, strange to say, without even a single square Rupee among them. Most of these came from Benares, from Mr. Gubbins, in February, 1853.

It is very curious how large a collection there is of Foreign continental coins, mostly Norwegian, some of very old date and probably of much interest to those valuing that series. There is a shilling also of Elizabeth of England, dated 1591, and a crown of Charles I. Mr. Speirs has besides given several old broad pieces and dollars, very curious and doubtless of value; one of James the Sixth of Scotland, in very fine order, dated 1582, and two others of 1570 and 1602, respectively; the others are of Maria Theresa, 1773, Frederick Duke of Brunswick, 1627, Hilary Third of Spain and India, 1637, Charles II. of do. 1668, Maximilian reigning Duke "Bulloniensis," 1677, Frederick of Prussia, 1785, Albert and Elizabeth reigning Duke and Duchess of Brabant, 1619, Sigismund III. of Poland, 1628, and Ferdinand II. of Hamburg. I have been thus particular, in enumerating these because it is strange to find such a collection of heavy medieval pieces in Calcutta, where they could hardly have been looked for.

In conclusion, I would urge that all friends to the Society, among whom must of course be specially included all who themselves feel any interest in Indian numismatics, should be requested to aid in every mode in their power, so that the coin collection may be placed in that rank which would so well befit a society whose Journal is the depository of the life long labours of "James Prinsep."

4. From Baboo Radhanauth Sikdar, an abstract of the Meteorological Register kept at the Office of the Surveyor General for the months of January and February last.

5. From Lieutenant H. Raverty, a paper on the Seeposh Kaffirs.

The Librarian and the Zoological Curator submitted their reports.

Report of Curator, Zoological Department.

The following specimens have been presented to the Society since my last Report.

1. Dr. D. Scott, Hansi. The following specimens.

VULPES LEUCOPUS, nobis, *J. A. S.* XXIII, 729. Skin of a fine male, which literally verifies the statement of Mountstuart Elphinstone, quoted *loc. cit.*; appearing "as if it had been wading up to the belly in ink:" the name *leucopus*, therefore, is unfortunate, as being applicable (it would seem) to one sex only. The skin now sent is perfect; and though wanting the skull and limb-bones, has been set up as a stuffed specimen. Dr. Scott remarks of this species, *in epistolâ*, that "they differ extremely in colouring; some look all over of a sandy-red colour, while others have black bellies and are very light above. The skin sent is an excellent specimen, one reason for this being, that it was from an inhabitant of the open fields. Those that live among sand-hills get so full of *burrs* (or thorny seeds) that they look miserable, and scratch off a good deal of their fur." For further information concerning this little Desert Fox, *vide* Vol. XXV, 443.

FELIS ORNATA, Gray, *vide J. A. S.* XXV, 441. A fine skin, but wanting that of the lower jaw and tail-tip, and therefore unfit for setting up: also two skins of domestic Cats, sent as supposed hybrids of this species, but which are characteristic representatives of the streaked Indian type of domestic Cat, described in the note to Vol. XXV, p. 442. Having since communicated on this subject with Dr. Scott, he subsequently wrote word, that—"With regard to hybrid Cats, I can offer no proof; but I know that a year or two ago a common domestic Cat had kittens under my haystack, and one of them was precisely like the F. ORNATA, and without any white,—whilst my gardener had a tom which might easily have passed for an ORNATA, only that he had a white collar and belly, and from living less in the sun was less rusty in colour. There are plenty of tame Cats here with spots like those of the ORNATA; and I will try to procure and send some skins of them."

PTEROCLES ARENARIUS; a skeleton, kindly sent at my request.

PALUMBÆNA ŒNICAPILLA, nobis, *n. s.* Indian 'Stock Pigeon;' a skin described in a separate paper.*

* Dr. Scott has likewise favored me with a description of two living *Ghor-khurs* from the Bikánir desert; the male of which is most remarkable for having a well developed cross-stripe over the withers, besides faint stripes on the limbs,—not a trace of either being visible in the female. They are believed, he says, to be between eighteen months and two years old.

"The male stands, as near as I could measure, 45 inches high (11¼ hands) at the shoulder; and the female about 2 in. less (but she was not measured).

2. Lt Brownlow, Engineers, Lahore. Skull of URSUS ISABELLINUS, from Kashmir; and a few bird-skins, also from Kashmir, including MEROPS APIASTER and NUCIFRAGA MULTIMACULATA. Likewise some specimens of a reversed *pupiform* BULIMUS new to the museum, and distinct from B. KUNAWARENSIS of Hutton.

3. Capt. Robert Tytler, 38th N. I., Delhi. Five skins of birds, including the HIRUNDO CONCOLOR, Sykes, Small Crested Lark—GALERIDA BOYSII, and SYLVIA JERDONI (if correctly distinguished from the European S. ORPHEA).

"The upper part of the body is of a buff-fawn colour, with white belly and legs, and a white streak from the flanks up the side.

"Both have a dark stripe along the back, looking like a continuation of the mane, except that the hair of it is short and smooth: the colour of this stripe is dark brown or nearly black, and it extends all along the back and down part of the tail. The male has a most distinctly marked stripe of the same colour across the withers; but the female has not. The male also has distinctly marked fawn stripes on both fore and hind legs; but I could not discern a trace of them in the female. The black tuft at the end of the tail reaches to about the hocks. The cross-stripe over the withers of the male was about an inch broad, and extended about a foot down the shoulders on each side. Moreover there was a female *Ghor-khur* here some years ago, and she was said to have the cross-stripe on withers. This I have been told by more than one person who saw her."

Of several *Ghor-khurs* which I have seen and minutely observed in Europe, one only (in the late Surrey Zoological Gardens) had an incipient cross-stripe, extending only about an inch on one side (as near as I can remember), and less than half an inch on the other; and I have sought in vain for traces of the cross-stripes on the limbs: these occur in some domestic Donkeys, even adults, but not in all, however young; and are particularly distinct in some of the small Asses of this country, being of a black colour (not fawn), moderately broad and placed somewhat distantly apart.

It would seem that the deserts of Southern Arabia, the Thebaid, Nubia, and Abyssinia (both on the plains and mountains), are the true indigenous home of EQUUS ASINUS (the "Wild Ass" of Chesney); that the more northern parts of Arabia, with Syria and Mesopotamia, are tenanted by the recently described E. HEMIPPUS (or "Wild Horse" of Chesney); while the deserts of W. India, S. Afghânistân, Persia, and thence onward to the Aral and beyond, are inhabited by the *Ghor-khur*, the distinctions of which (if any) from the E. HEMIONUS of middle Asia remain to be positively determined.

"From what I have heard," remarks Dr. Scott, "the *Ghor-khur* is still plentiful enough in the Bikhanor desert; but they are wild and difficult of approach.

4. Bábu Rajendra Mállika. Body of a Civet (VIVERRA ZIBETHA) now preparing as a skeleton. Ditto of a male Hog Deer in its seasonal spotted coat,—sent as a hybrid between C. AXIS and C. PORCINUS. Ditto of a fine adult male of an African Monkey, the CERCOPITHECUS CYNOSURUS; and ditto of a Cassowary, which has been prepared as a skeleton.

5. C. Darwin, Esq. F. R. S. &c. &c. Pair of Red Deer horns (C. ELAPHUS),—frontlet with horns, and three odd horns, of C. DAMA,—and pair of horns of C. VIRGINIANUS; with specimens of various British *Crustacea*.

6. Major Tickell, late of Moulmein. Also some specimens of Crabs from that vicinity.

7. Dr. J. R. Withecombe. A beautiful S. African Snake, the ELAPS HYGÆI, forwarded from Cape town.

May 1*st*, 1857. E. BLYTH.

A year or two ago the Buháwulpur Nawáb in a month's shooting only got seven. Their flesh is eaten as venison."

Since the foregoing observations were transcribed, the following notice has appeared in a contemporary Journal, the 'India Sporting Review,' *n. s.* No. VIII. no doubt elicited by some articles contributed to that periodical with the express design of educing such information from competent authorities.

It appears that *Ghor-khurs* are still tolerably numerous in the *Pát* or desert between Asni and the hills, west of the Indus, above Mithur-kote. "They are to be found wandering about this desert pretty well throughout the year; but in the early summer, when the grass and the water in the pools have dried up from the hot winds (which are here terrific), the greater number, if not all, of the *Ghor-khurs* migrate to the hills for grass and water. Some are probably to be found in the hills throughout the year, for among them are sandy plains of greater or less extent. The foaling season is in June, July, and August; when the Beluchis ride down and catch numbers of foals, finding a ready sale in the cantonments for them, as they are taken down on speculation to Hindustán. They also shoot great numbers of full grown ones for food, the ground in places in the desert being very favorable for a 'drive,' or stalking." The author performed the difficult feat, on an Arab horse, of riding down and spearing one of these animals, a female; and he remarks that—"They stand about 12 hands high, are of a fawn (Isabelle) colour, with white on the belly, chest, and neck. They have a dark chesnut mane, [and black] dorsal stripe, tuft to the tail, and tips to the ears. Some are very beautifully striped on the legs; many are mottled. I have seen one or two of a very dark colour. They have not generally the stripe on the shoulder, though I think I have seen some with it slightly marked. Their head very large; ears very long: the eye handsome; and coat very fine." This variation in colouring and especially the stripes on the legs do not appear to have been observed in the *Kyangs* of Tibet.

LIBRARY.

The library has received the following accessions during the month of April last.

Presented.

An introduction to the use of the Mouth-Blowpipe, by Dr. Theodore Scheerer. Translated and compiled by H. F. Blanford, 1856, 12mo.—BY MR. BLANFORD.

Selections from the Records of the Government of India, No. XXI. containing Revenue Reports of the Ganges Canal, for the year 1855-56. Irrigation in Egypt.—BY THE GOVT. OF INDIA.

Memoirs of the Geological Survey of India, Vol. I. Part I.—BY THE GOVT. OF BENGAL.

Selections from the Records of the Bengal Government, No. XXV. Reports on the Bengal Teak Plantations, Productive capacities of the Shan countries, Reports on Serajgunge, on Vaccination, on the Tea Plant in Sylhet, on the Botanical Gardens, Calcutta, and on the Patna Opium Agency, 2 copies.—BY THE SAME.

Ditto from the Records of Government, N. W. Provinces, Part XXV. 1857.—BY THE AGRA GOVT.

Ditto from the Records of the Bombay Government, No. XXXVIII. Correspondence relating to the tenure of the possessions in the Deccan held by His Highness Jyajee Rao Sindia under the Treaty of Surie Aujungaum.—BY THE GOVT. OF BOMBAY.

Ditto from ditto, No. XL. Papers regarding the Revenue Settlement effected in the districts of Omerkote and Thun: and on the Condition and System of arrangement of Thurr and Pankur districts.—BY THE SAME.

Annual Report (34th) of the Parental Academic Institution and Doveton College, 1857.—BY MR. SMITH.

The Annals of Indian Administration, edited by M. Townsend, Part I. and II.—*Serampore*, 1857.—BY THE GOVT. OF INDIA.

Sjaïr kén Tamboehan, door Dr. J. J. de Hollander, *Lieden*, 1856, *pamphlet*.—BY THE AUTHOR.

Mémoirs de la Société Impéreale des Sciences Naturelles de Cherbourg, 3 vols. 8vo. *Paris*, 1855.—BY THE SOCIETY.

Zeitschrift der Deutschen morgenländischen Gesellschaft, Band XI. Heft I. *Liepzig*, 1857, 2 copies.—BY THE GERMAN ORIENTAL SOCIETY.

Indische Alterthumskunde. 8vo. von C. Lassen. Dritten Bandes, Helft. I. *Liepzig*, 1857.—BY THE AUTHOR.

Journal of the Statistical Society of London, Vol. XX. Part I. March. 1857.—BY THE SOCIETY.

First Report of the Committee on Beneficient Institutions, 1857.—By the Same.

Journal Asiatique, Nos. 32 and 33, November and December, 1856, and January, 1857.—By the Asiatic Society of Paris.

Proceedings of the Royal Geographical Society of London, Nos. 6 and 7.—By the Society.

Journal of the Agricultural and Horticultural Society of India, Vol. IX. Part III. *Calcutta.*—By the Society.

Discours de M. Garcin de Tassy, pamphlet.—By the Author.

Proceedings of the Royal Society, Vol. 8, Nos. 23 and 24.—By the Society.

Journal of the American Oriental Society, No. 2.—By the Editor.

The Calcutta Christian Observer for April, 1857.—By the Editor.

The Oriental Christian Spectator for March, 1857.—By the Editors.

The Oriental Baptist for April, 1857.—By the Editor.

The Upadeshak for April.—By the Editor.

Exchanged.

The Athenæum for January and February, 1857.

The London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science, Nos. 84 and 85.

Purchased.

Astronomical Observations made at the Royal Observatory at Greenwich in the years of 1817 to 1825. 8 vols. folio.

Observations Astronomiques faites a l'Observatoire Royal de Paris, Tome I. 1825, *Paris.*

Histoire des Insectes, Lépidoptéres. Tome I. V. VI. VII. and VIII. 8vo. *Paris,* with Planches.

Visit to Remarkable Places: by William Howitt, 8vo.

Die Lieder des Hafis. Persisch mit dem commentare des Sudi herausgegeben von Hermann Brockhaus, Band, I Viertes Heft, *Liepzig,* 1857.

The Literary Gazette, Nos. 2087 to 2095.

Comptes Rendus, Nos. 1 to 7, 1857.

Journal des Savants for January and February, 1857.

Index to ditto for 1856.

Revue et Magazin de Zoologie, No. 12 for 1856 and No. 1 for 1857.

Annales des Sciences Naturelles, No. 5. 1857.

The Annals and Magazine of Natural History, Nos. 110 and 111, for 1857.

The Quarterly Review, No. 201, January, 1857.
Revue des deux Mondes, (bi-monthly) January 15th to 1st March, 1857.
The American Journal of Sciences and Arts, No. 67.

GOUR DAS BYSA'CK.
Librarian & Assistant Secretary.

1*st May*, 1857.

JOURNAL

OF THE

ASIATIC SOCIETY.

No. IV. 1857.

Notes on the distribution of some of the land and freshwater shells of India: Part I.—By W. Theobald, Junr.

Birmah and the Tenasserim Provinces.

In the present paper it is my intention to give a sketch of the distribution of the land and fluviatile shells of certain portions of India, as far as they have been observed, in the hope that my notes may prove a not uninteresting addition to our previous knowledge of the subject, and shew by the great addition now made to the list of known species, how much yet remains to be done in this department of Natural History.

The names used are with scarcely an exception those furnished by Mr. Benson, who has described many of the new species in the Annals and Magazine of Natural History for last year, though many still possess merely MSS. names, which, together with the new species described from specimens furnished by me, I have indicated in the following list, by asterisks (*).

On my first communicating with Mr. Benson, he informed me that but twenty-three species of land shells were authentically known from the Tenasserim Provinces. Of these, four species, which escaped my notice, may here be mentioned to complete the list up to the present time, viz.

Vitrina Birmanica, Philippi.
Bulimus moniliferus, Gould.
Cyclophorus perdix, Sav.
Leptopoma Birmanum, Pfr.

CYCLOSTOMIDÆ.

Pterocyclos. Benson.

1.* P. pullatus, B.—Akowtong (on the Irrawaddi R.) Not uncommon.

2.* P. cetra, B.—Maulmein and Phaiethán (on the Tenasserim R.) Not common.

Cyclophorus. Montfort.

3. C. aurantiacus, Schum.—Tenasserim valley, not common.

4.* C. Theobaldianus, B.—Tenasserim valley, Maulmein, Thaietmio. This shell is no where common. In the Tenasserim valley it equals C. aurantiacus in size, but is easily distinguished by its more depressed form, colourless peristome, and flexuous striation. It has the greatest range of any Cyclostomatous shell of the provinces.

5.* C. Haughtoni, mihi.—n. s. Testâ, simili C. aurantiaco solidâ nitidiusculâ; carinatâ, superne saturate castaneâ; in decorticatis speciminibus, spirâ lineis albidis ziczac variegatâ. Carinâ, catenatâ, alternate albidâ et castaneâ. Periomphalo albido, fasciis nonnullis castaneis spiralibus lineato. Peristomate vix pallidissime ochraceo, ore interiori cærulescente—Maulmein.

Size $\left.\begin{matrix}1.70 \text{ Major} \\ 1.35 \text{ Minor}\end{matrix}\right\}$ diameter in inches. This shell I have much pleasure in naming after Capt. Haughton, to whom I am indebted for some fine shells. It occurs abundantly at the "farm caves," and is at once distinguished from all other Tenasserim Cyclophori, by its parti-coloured funiculate keel, which is not the result of abrasion, but is best seen in specimens covered by the epidermis.

6. C. expansus, Pfr.—Tenasserim valley. Not rare. This shell varies much in size, from $\frac{1.70}{1.26}$ to $\frac{0.80}{0.65}$.

7.* C. affinis, mihi.—n. s. Testâ, subgloboso-turbinatâ, umbilicatâ, solidiusculâ, castaneo-marmoratâ, haud nitidâ, vix carinatâ; peristomate reflexo, forti, expansiusculo-distorto, pallidissime flavescente, intus cærulescente $\frac{1.60}{1.36}$ to $\frac{1.40}{1.12}$ Maulmein.

This shell has no very marked character, unless a distortion in the peristome, one-third from its sutural margin, should prove con-

stant. But two specimens were obtained, of which the measurements are given above.

8. C. fulguratus, Pfr.—Thaiet-mio, Rangoon, very common. This fine shell is not rare at Rangoon and becomes very abundant near Thaietmio. It varies much in size and colour, some specimens are almost colourless, $\frac{1.80}{1.30}$ to $\frac{1.03}{0.85}$.

9.* C. cryptomphalus, B.—Ava. Procured by Mr. Oldham, does not seem to be a plentiful species.

10.* C. scurra, B.—Pegu (province).

11.* C. balteatus, B.—Pegu (province).

12.* C. scissimargo, B.—Phaiethán. Not common.

13.* C. calyx, B.—Akowtong, on the Irrawaddee, not common.

14. C. cornu-venatorium, Sav.—Ava. Procured by Mr. Oldham.

15. *C. perdix, Sav.* (Not obtained by me.)

Leptopoma. Pfeiffer.

16.* L. aspirans, B.—Tenasserim valley, very common.

17. *L. Birmanum, Pfr.*—(Not noticed by me).

Alycæus. Gray.

18.* A. pyramidalis, B.—Therabuin hill, near the Tenasserim river. This pretty little shell appears confined to Therabuin hill, where it is not very common. It is of a delicate pink tint.

19.* A. amphora, B. Maulmein and Tenasserim valley. Rare.

20.* A. umbonalis, B.—Akowtong. Not rare.

21.* A. sculptilis, B.—Thaiet-mio. Rare.

22.* A. armillatus, B.—Thaiet-mio. Rare.

Megalomastoma. Guilding.

23.* M. gravidum, B.—Maulmein. Very common.

24. M. sectilabre, Gould.—Yanglaw, on the Tenasserim. Very rare.

Rhaphaulus. Pfeiffer.

25. R. chrysalis, Pfr.—Maulmein. Very rare.

Pupina. Vignard.

26.* P. arula, B.—Yanglaw, very rare. Among dead leaves.

27.* P. artata, B.—Maulmein. Not uncommon, among dead

leaves and rubbish at the foot of rocks. By the habitat "Maulmein" the "Farm caves" in limestone hills a few miles distant are intended.

Otopoma. Gray.

28.* O. blennus, B.—Maulmein. Rare.

Hydrocena. Parreyss.

29.* H. illex, B.—Phaiethan. Not rare. On the bare face of limestone rocks.

30.* H. pyxis, B.—Thaiet-mio. Not rare, under stones.

31.* H. frustrillum, B.—Ava. Procured abundantly by Mr. Oldham.

Tabular view of the distribution of the Cyclostomidæ, in Birmah and the Tenasserim Provinces.	Ava.	Thaiet-mio.	Akowtong.	Rangoon.	Maulmein.	Tenasserim valley.
Cyclophorus cornu venatorium Sav.	*					
* „ cryptomphalus, B. ...	*					
„ fulguratus, Pfr. ...	...	*	*	*		
* „ calyx, B.	...	...	*			
* „ Theobaldianus, B. ...	...	*	...	...	*	*
* „ Haughtoni, mihi, ...	...	...	...	...	*	
* „ affinis, mihi, ...	...	...	...	...	*	
* „ scurra, B.	...	...	...	?		
* „ balteatus, P.	...	...	...	?		
„ aurantiacus, Schurr, ...	...	...	...	...	...	*
„ expansus, Pfr.... ...	...	...	...	...	...	*
* „ scissimargo, B. ...	...	...	...	...	...	*
* Alyceus sculptilis, B.	...	*				
* „ armillatus, B.	...	*				
* „ umbonalis, B.... ...	...	...	*			
* „ amphora, B.	...	...	...	...	*	*
* „ pyramidalis, B. ...	...	...	...	...	...	*
* Hydrocena frustrillum, B. ...	*					
* „ pyxis, B.	...	*				
* „ illex, B.	...	...	...	...	...	*
Rhaphaulus chrysalis, Pfr.... ...	...	...	...	...	*	
* Megalomastoma gravidum, B. ...	...	...	...	...	*	
„ sectilabre, Gould, ...	...	...	...	...	...	*
* Pupina artata, B. ...	...	...	...	...	*	
* „ arula, B.	...	...	...	...	...	*
* Pterocyclos pullatus, B. ...	...	...	*			
* „ cetra, B.	...	...	...	...	...	*
* Leptopoma aspirans, B.	...	...	...	...	...	*
* Otopoma blennus, B.	...	...	...	...	*	

Helix. L.

1.* H. Oldhami, B.—Ava. Procured by Mr. Oldham.

2.* H. scalpturita, B.—Ava. What appears to be a small

variety of the same shell occurs at Thaiet-mio, and nearly approaches H. similaris, Fer. in aspect, though larger.

3.* H. bolus, B.—Thaiet-mio. Very abundant at Thaiet-mio, Prome, Henzada, &c.

4.* H. pauxillula, B.—Thaiet-mio, where this minute helix is rare.

5.* H. mensula, B.—Thaiet-mio. Rare.

6.* H. hariola, B.—Thaiet-mio. Rather rare. Inhabits Acacia trees in jungle.

7.* H. petila, B.—Thaiet-mio. Rare.

8. H. refuga, Gould.—Thaiet-mio and Akowtong. Not very rare.

9.* H. pausa, B.—Akowtong. Not common. Found in gardens on Areca Palms, &c.

10. H. rotatoria, V. de Busch.—Akowtong. Very common, found in company with the last. This shell is rarely distinguishable from the Sylhet H. tapeiria, B. By the aid of a lens however the sculpture is found to be more ornate and flexuous, whilst in the latter it is simply striate.

11.* H. textrina, B.—Henzada. Common in jungle. The adult shell has a very handsome pellucid appearance. In the rains the foot is too large for immediate retraction.

12.* H. molecula, B.—Rangoon. This little species abounds on the Great Pagoda.

13. H. achatina, Gray.—Maulmein. Very abundant.

14.* H. bombax, B.—Maulmein. Rather rare.

15. H. honesta, Gould.—Maulmein. Tenasserim valley. Rather common.

16. H. Merguiensis, Philippi.—Maulmein. Tenasserim valley. Common. Seems a var. of the next species.

17. H. Gabata, Gould.—Maulmein. Mergui. Common.

18.* H. capessens, B.—Maulmein. Not very rare.

19.* H. infrendens, B.—Maulmein. Not very rare.

20.* H. Pylaica, B.—Maulmein. Not uncommon. This curious little shell resembles the American H. hirsuta.

21.* H. catinus, B.—Maulmein. Very rare.

22.* H. cassidula, B.—Maulmein. Rare.

23. H. delibrata, B. (H. procumbens, Gould)—Maulmein. Tenasserim valley. No where common. This species has a very wide range, being also found near Cherra.

24. H. refuga var. dextrorsa.—Phaiethan. This dextral var. was only met with at one spot in the Tenasserim valley, where it was not rare; it is curious that H. refuga does not occur in the valley, but was first seen at Akowtong.

25. H. castra, B.—Pija. Rare. A single specimen of this Darjiling shell was found at Pija between Tavoy and Mergui.

26.* H. attegia, B.—Phaiethan. Not common.

27.* H. arx, B.—Therabuin Hill. Rare. This hill has afforded many singular forms, no where else met with.

28.* H. convallata, B.—Therabuin Hill. Rare. Another singular shell also met with near Pija on the coast between Mergui and Tavoy.

29.* H. biforcata, B.—Therabuin Hill. A most singular shell, of which but one adult specimen was procured.

30.* H. ceryx, B.—Phaiethan Hill. Rare.

31.* H. artificiosa, B.—Phaiethan. Not rare, but nowhere else found.

32.* H. causia, B.—Phaiethan. Rare.

33.* H. forabilis, B.—Phaiethan. Very rare.

34.* H. perpaula, B.—Phaiethan. Very rare.

35.* H. levicula, B.—Phaiethan. Rare.

36.* H. petasus, B.—Phaiethan. Not rare.

37.* H. precaria, B.—Phaiethan. Very rare.

38. H. Saturnia, Gould.—Tenasserim valley. Rare.

39. H. anceps, Gould.—Tenasserim valley. Common.

40. H. retrorsa, Gould.—Tenasserim valley. Common.

41.* H. acerra, B.—Mergui. Common.

42. H. resplendens, Philippi.—Tenasserim valley.

43. H. Theodori, Philippi.—Yanglaw. Very rare.

Tabular view of the distribution of Helices in Birmah and the Tenasserim Provinces.	Ava.	Thaiet-mio.	Akowtong.	Rangoon.	Maulmein.	Tenasserim Valley. Mergui.	Therabuin Hill.	Phaiethan.	Yanglaw.
* Helix Oldhami, B.	*								
* „ scalpturita, B.	*								
* „ bolus, B.	...	*	*						
* „ pauxillula, B.	...	*							
* „ mensula, B.	...	*							
* „ hariola, B.	...	*							
* „ petila, B.	...	*							
„ refuga, Gould, ...	...	...	*						
* „ pausa, B.	...	...	*						
„ rotatoria, V. de Busch, ...	...	...	*						
* „ textrina, B.	...	...	*						
* „ molecula, B.	...	...	...	*					
„ achatina, Gray, ...	...	...	...	...	*				
* „ bombax, B.	...	...	...	...	*				
* „ capessens, B.	...	...	...	...	*				
* „ infrendens, B.	...	...	...	...	*				
* „ Pylaica, B.	...	...	...	...	*				
* „ catinus, B.	...	...	...	...	*				
* „ cassidula, B.	...	...	...	...	*				
„ delibrata, B.	...	...	...	...	*	*			
„ Merguiensis, Philippi, ...	...	...	...	...	*	*			
„ Gabata, Gould, ...	...	...	...	...	*	*			
„ honesta, Gould, ...	...	...	...	...	*	*	*	*	
„ castra, B.	...	...	...	...	...	*			
„ refuga var. dextrorsa, ...	...	...	...	...	...	...	...	*	
„ Saturnia, Gould, ...	...	...	...	...	...	*	*	*	
„ retrorsa, Gould, ...	...	...	...	...	...	*	*	*	
* „ acerra, B.	...	...	...	...	...	*			
„ resplendens, Philippi, ...	...	...	...	...	...	*			
„ anceps, Gould, ...	...	...	...	...	...	*	...	*	
* „ arx, B.	...	...	...	...	...	...	*		
* „ convallata, B.	...	...	...	...	...	...	*		
* „ biforcata, B.	...	...	...	...	...	...	*		
* „ attegia, B.	...	...	...	...	...	...	...	*	
* „ ceryx, B.	...	...	...	...	...	...	...	*	
* „ artificiosa, B.	...	...	...	...	...	...	...	*	
* „ causia, B.	...	...	...	...	...	...	...	*	
* „ forabilis, B.	...	...	...	...	...	...	...	*	
* „ perpaula, B.	...	...	...	...	...	...	...	*	
* „ levicula, B.	...	...	...	...	...	...	...	*	
* „ petasus, B.	...	...	...	...	...	...	...	*	
* „ precaria, B.	...	...	...	...	...	...	...	*	
„ Theodori, Philippi, ...	...	...	...	...	...	...	...	...	*

Hypsclostoma. Benson.

44.* H. tubiferum, B.—Thaiet-mio. This singular little anos-

tomatous shell was only met with at one spot on limestone rocks, near the Coal mines, where it did not seem very rare.

Streptaxis. Gray.

45. S. Petiti, Gould.—Maulmein. Tenasserim valley. Common.

Vitrina. Draparnaud.

46. *V. Birmanica, Philippi*, was not met with by me.

Cryptosoma. Mihi, n. g.

Testâ vitrinæ simile, sed robustiore. Peristomate obtuso haud tenue. Animale, penitus intra testam retractile, et in æstivationis tempore, solido epiphragmate obtecto.

47. C. præstans, (Vitrina præstans) Gould.—Maulmein. Martaban. Tenasserim valley.—I have separated this shell from Vitrina, as the animal is perfectly retractile, and the peristome is thicker than in Vitrina proper, and not membranous. It is common in holes in laterite at Martaban and not rare throughout the Tenasserim Valley. Its colour is a bay olive Cajiput green.

Succinea. Draparnaud.

48. S. semiserica, Gould.—Tavoy. Tenasserim Valley. Not rare.

49. S. (ined.).—Rangoon. A small species, rather rare.

Bulimus. Scopoli.

50. B. perversus, var. atricallosus, Gould.—Tenasserim Valley. Common. Dextral and sinistral shells occur in equal numbers.

51. B. Janus, Pfr.—Procured alive from dealers in Mergui, and said to come from the neighbourhood. Dextral and sinistral shells equally common.

52.* B. Theobaldianus, B.—Yanglaw. Very rare.

53.* B. putus, B.—Akowtong. Rather rare.

54. B. insularis, Ehr.—Below Ava. Procured abundantly by Mr. Oldham.

55. B. gracilis, H.—A little shell which seems to be this species is common from Thaiet-mio to Tavoy.

56. *B. moniliferus, Gould.*—Not met with by me.

Achatina. Lamarck.

57. A. tenuispira, B.—Thaiet-mio. Akowtong. A slender var. of this Darjiling species is not uncommon at the roots of Bamboo clumps near Akowtong.

Pupa. Lamarck.

58. P. bicolor, Hutton. (P. mellita, Gould).—Thaiet-mio, Tavoy. This little species is widely spread, but nowhere abundant. It is usually found in moist earth in company with Bulimus gracilis.

Clausilia. Draparnaud.

59. C. insignis, Gould.—Maulmein. Very rare. Tenasserim Valley. Not common.

60. C. Philippiana, Pfr.—Maulmein. Tenasserim Valley. Very common.

Auricula. Lamarck.

61. A. dactylus, Pfr.—Mergui. Not common. In Mangrove swamps.

62. A. glans, B.—Amherst. At the mouth of the Salween or Maulmein river. Rare.

Pythia.

63. P. plicata, Fer. Ava (teste Oldham.) Maulmein. Common.

Tabular view of the distribution of various Burmese Helicidæ.	Ava.	Thaiet-mio.	Akowtong.	Rangoon.	Maulmein.	Tenasserim Valley.
* Hypsclostoma tubiferum, B.	...	*				
Streptaxis Petiti, Gould, ...	...	...	...	...	*	*
Cryptosoma præstans, Gould, ...	...	...	...	...	*	*
Succinea semiserica, Gould, ...	...	...	...	...	...	*
„ (ined.), ...	...	...	...	*		
Bulimus atricallosus, Gould, ...	...	...	...	...	...	*
„ Janus, Pfr.	...	...	...	...	...	*?
* „ Theobaldianus, B.	...	...	...	...	...	*
* „ putus, B.	...	...	*			
„ insularis, Ehr.	*					
„ gracilis, H.	...	*	*	*		
Achatina tenuispira, B.	...	*	*			
Pupa bicolor, H. (mellita, Gould), ...	...	*	*	?	?	*?
Clausilia insignis, Gould, ...	...	...	...	...	*	*
„ Philippiana, Gould, ...	...	...	...	...	*	*

Total	Cyclostomidæ,	Genera,	...	...	...	...	9	
„	„	Species,	...	...	...	...	31	
„	„	„	...	...	...	...	„	31
„	Helicidæ	Genera,	...	...	...	...	10	
„	„	Species,	...	...	...	...	60	
„	„	„	...	...	...	...	„	60
„	Auriculidæ.	Genera,	...	...	...	...	2	
„	„	Species,	...	...	...	...	3	
								3
		Grand Total,	...	...	...			94

June 8th, 1857.

Practical Notes on the best mode of obtaining the highest duty from Burdwan Coal as compared with English Coal.—*By* HENRY PIDDINGTON.

1. I assume in this paper that the coal supplied is the average good Burdwan Coal; for there can be no doubt that a great deal of inferior, shaly, stuff has been from time to time sold as Burdwan Coal, and hence, and from the cause which I shall subsequently indicate, arises its bad reputation amongst engineers. I assume also that the boiler furnace is one with "joggle bars."

2. Perfectly pure coal should contain no earthy matter whatsoever, but this is rarely, perhaps never, met with. Good English Pit Coal contains from 8.00 to 0.8 per cent. of earthy matter; the average of such as has been examined here being 2.8 per cent. and the Welsh Steam Coal 2.0 per cent. An average of several analyses of good Burdwan Coal gives from 12 to 15 per cent. as the proportion of earthy matters; so that we have

English Pit-Coal.	Best Welsh Steam Coal.	Burdwan Coal.
2.8 pr. ct.	2.0 pr. ct.	13½ pr. ct.

3. I do not refer here to the iron and sulphur, of which most coal contains varying proportions; because I am not so much writing a chemical as a practical paper, and while the iron on the one hand is usually included in the earthy matters, the Burdwan Coal on the other does not contain much sulphur.

4. Again: every engineer knows that some coal contains too large a proportion of gaseous matter and too little carbon (coke); so that though it will light and flame up easily, and thereby raise the steam quickly, yet it does not leave a good bed of glowing coke to keep it up steadily for a long time, and is thus both a wasteful and so to say an *uncertain* coal; wasteful because it burns away too fast, and uncertain as giving at one time too much steam and another too little. And moreover an improper coal for sea-going Steamers as they can only carry a given quantity.

5. The opposite kind, where there is too little gas and too much carbon, raises steam slowly and is apt to coke and clinker and the fire to get slack, for it then approaches to a coke or anthracite fire in a coal furnace. And thus the steam is apt to get low.

6. Again as to the earthy matter. Up to a small per centage, say perhaps 5 per cent. it does not do harm when burnt in coal, though it tells heavily in the coke, and it perhaps keeps the coal together while burning; but being incombustible itself, if this proportion is exceeded, the burning of the coal is to a certain extent impeded, and the coal clinkers very much, so as to require constant, and to the firemen, fatiguing attention. And there is much waste in the clinker which, when examined, will be usually found to contain a considerable proportion of coke in the cinder.

7. The gaseous contents of coal and its carbon are also to be considered, and here we have from the same authority as before.

	Gaseous.	Carbon.
English Pit Coal,	31.00	67.3
Welsh Coal,	29.25	68.75
Burdwan Coal,	36.2	50.2

We have therefore in the Burdwan Coal an excess of gaseous matter and a deficiency of about 18 per cent. of carbon (coke) of which 13½ per cent. is made up by earthy matter and the remainder by water, of which it usually contains from 4 to 8 per cent.

8. We build Steamers, such as they are, in India; but their machinery is sent out from England, where the engineers and boiler-makers have no idea of these peculiarities in our Indian Coal, and of course construct their furnaces for burning English Coal, and as our officers and engineers know little or nothing also of

Indian Coal, except that it is a troublesome coal—that it clinkers excessively; and sometimes, where they get a large proportion of inferior kinds in their lot,—that *the steam cannot be kept up with the Burdwan Coal*—they are clamorous for English Coal,—and get it. We are thus in very many cases trying TO BURN INDIAN COAL ON ENGLISH GRATES! and are always complaining that we do not succeed.

9. I have succeeded, and on a large scale, when boiling sugar in open pans, in obtaining, not the duty of English Coal from Burdwan Coal, but something much higher than could be looked for—say within ten or fifteen per cent. of English Coal, and without *much* more trouble, except in a little more work with the picker, which the men carefully attended to because the furnaces being constructed to burn their own smoke, which they did very completely, the men, who were well paid, were liable to a fine, if the smoke-flag was seen for any length of time at the top of the chimney.

10. And I managed this by the following simple expedient.

Whenever I had Burdwan Coal to burn, I took out one of the bars and steadied the others by bits of scrap iron put in between their shoulders. This increased the air-way and the Burdwan Coal then burnt freely, but of course gave a larger quantity of its white ash.

11. The reason of this is simple enough. If we suppose a given quantity of English, or Welsh, Coal to perform its highest duty as a steam coal, in any given time, with, say a certain number of cubic feet of air, which we will call 1000, we have first a coal containing say $2\frac{1}{2}$ per cent. of earthy matter requiring this amount of air in a given time.

12. But it is clear that a coal containing 12 or 15 per cent. will require a much larger amount of air in the same time. We do not know *how* much, or what is the proportion in which the earthy matter obstructs the combustion of the coal in which it is contained; but we do certainly know that every question of combustion from Cannel Coal to Anthracite is a question of draft, and of air-way; of the rapidity of the passage of the air, which is the draft, and of the size of the spaces through which this draft passes, which is the air-way.

13. Now as we can only alter our funnels by reducing them, which we do not want to do, the draft is a constant quantity, and hence the resource is that which I have spoken of above—to increase

the air-way. I have spoken there of taking out *one* fire bar, but I am not sure that where the shoulders of the bars are narrow or the furnace large, this would be enough; yet to take out two would perhaps leave the spaces so wide, that the small coal would fall through before it was burnt? and it should not be forgotten that these questions, though without very accurate experiments and measurements we can only estimate them roughly, are really questions of nice adjustment.

Notes on Kokán, Kashghár, Yárkand, and other places in Central Asia.—By Lieut. H. G. RAVERTY, *3rd Regt. Bombay, N. I., Assistant Commissioner, Multán.*

About six years since, the Right Hon'ble B. Disraeli, M. P., at the prayer of the sisters of the unfortunate Lieutenant Wyburd of the Indian Navy, at that time supposed to be in slavery at Kokán, the capital of one of the petty states of Central Asia, had, by a motion in the House of Commons, endeavoured to rouse the British Government to effect his release.

This officer had been despatched from Persia to Bokhárá for the purpose of making enquiry into the fate of Stoddard and Conolly, and had never returned. He appears to have been sold into slavery by the ruler of Bokhárá.

Some months previous to the motion of Mr. Disraeli, an agent, said to have been despatched by the reigning chief of Kokán, had arrived at Pes'háwar, with information, that a European calling himself Wypárt, was then in confinement in that city under the suspicion of being a spy of the Russians (with whom the Kokán chief was at enmity); but that he protested he was an Englishman and had escaped from slavery at Bokhárá. The agent in question, I was informed, had stated the readiness of the Chief to release the unfortunate man, if any British officer were sent for that purpose, and would satisfy him as to his being a British subject.

As soon as I became aware of these circumstances, I tendered my humble services, both to the Government of Bombay, and the

Supreme Government, and offered to proceed through Kashmír and endeavour to effect the release of the officer in question.

Quite by accident I met with a Jew at Bombay, who had accompanied Dr. Hoff on his journey to Bokhárá, and who readily offered to accompany me; and two respectable natives of Kokán itself, who were returning to their native land from the pilgrimage to Mekkah, were ready to attach themselves to me, and answer for my safety, if necessary.

I was therefore sanguine of success, but, I am sorry to say, my services were not accepted; and it appears that a native was despatched on the mission, who, as might naturally have been expected, failed. He has lately returned, and from the exceedingly meagre account of his journey, published in the Journal of the Society, No. IV. of 1856, he appears to have gone to very little trouble in the matter, and to have confined himself to asking questions in bazars, and in despatching natives of the country to the adjacent districts for the same purpose. Whether he was duly accredited to the Chief of Kokán or otherwise, does not appear.

There is very little chance of the unfortunate officer, or European whoever he may have been, being still in the land of the living; the unfulfilment of that hope, so long deferred, which maketh the heart sick, must long since have brought to a termination the earthly troubles of the wretched captive.

For a number of years, I have made it a rule to collect every item of information respecting the geography, inhabitants, and resources of the little known parts of Central Asia. What I had already gleaned, at the time I offered to proceed to Kokán, and information furnished by the two Kokánies, I have referred to, I now submit, as giving a better and more minute, although still very meagre, account of this important and little known country, than that furnished by the unsuccessful agent, Khwája Ahmad, Nakshbandí.

* * * * *

Kokán, originally called Kokand, Korán, and Khoká, the capital of Audíján or Ferghánah, the native country of the Emperor Báber, is a large, populous, and well built city, surrounded by numerous

gardens, for which it is celebrated throughout Túrkestan. The city has considerably increased under the rule of the present Khán, Muhammad Omar,* son of Muhammad Alí Khán, during whose reign the city of Khojend became depopulated.

The houses of the city are generally built of wood, of several stories in height, with a foundation of burnt bricks. There are several large and well supplied bázárs, many of which, according to the general fashion in oriental cities, are covered in. It has one college, and several large Kárawánseráis for merchants.

The Árg or citadel, in which the Khán resides, a small city in itself, is situated west of the city, being divided by a large rivulet, a feeder of the Sirr, Jihún or Jaxartes river, which divides the two from north to south. The city is therefore amply supplied with water, which is considered to be one of the principal causes of its prosperity, its present population being at present computed to be about 100,000, half of whom dwell in houses, the remainder are nomades who dwell in tents.

The ruler, Muhammad Omar Khán is very popular. He hears all the complaints of his subjects, and administers justice to them in person every day, and settles their disputes.

This city is remarkable for the number of its public women, called in the Kattai (Northern China) language, Aghchha. They amount to about 4,000; and may be seen driving about the city, in carriages drawn by horses, at all times of the day.

Great quantities of opium, *chirs*, an intoxicating drug made from hemp flowers, and a decoction made from poppy-heads (different from opium), are made here. In every bázár numbers of people may be seen in all states and degrees of intoxication, and no one interferes with them; indeed people may do just as they choose here, with the exception of acting tyrannically, such are the Khán's commands. Tyranny and oppression in this city will not answer.

The ruler is on friendly terms with the Khán of Khwárazm, but no intercourse takes place with the Russians, Bokhárá'áns, or Chinese. He has a standing army of about 55,000 men, with thirty

* Said to have been dethroned since the above was written. His son Khuda Yar, is the present ruler.

guns, the whole of which, however, are not mounted. The private soldier's pay amounts to about ten tillahs, each tillah being worth about fourteen shillings English.

The country is small in extent, and surrounded by mountains on all sides, with the exception of the south-west, in which direction the city of Khojend is situated. Round about the city the country is densely populated, and well cultivated and fruitful. All kinds of grain, fruits, and other necessaries are plentiful and exceedingly cheap. Flocks and herds are also numerous.

The principal taxes levied from the agriculturists are ten per cent. on grain; on the value of sheep, goats, and cattle five per cent.; on the sale of a camel three tangas; on a horse two; on a sheep one. Merchandize is subject to a duty of two and a half per cent., and as the trade is very extensive, it yields a large revenue to the Khán. The inhabitants have to pay a yearly tax of one tillah on each house.

The chief towns of the Khánát of Kokán are; Murghelándasht, distant about thirty-six miles; Kársandasht, thirty-five miles; Muangándasht, about the same distance; Takht-Súlímán-dasht or Ush, thirty-four miles; Karghar-kohistán, sixty miles, and other places of less size.

The road lies through a desert tract of country, and no signs of habitation or cultivation are seen except in the vicinity of the different *manzils* or stages. The range of mountains, called the Takht or throne of Súlímán, lies to the west of the city of Kokán, distant about one hundred miles. It has two peaks.

On the arrival of a Kárawán at the *Ourtang* or Custom-house, the chief revenue officer who is stationed there, personally inspects the merchandize, and makes out two lists of the contents. One copy he transmits to Azím Khán, the Kattai chief, and retains the other himself. After due examination of the goods he grants a pass to the merchants, and they can then proceed on to Káshghár.

On approaching any *Ourtang* or Custom-house, on a journey, it is necessary for the Káfilah Báshí, or leader of the Kárawán, to proceed there on foot, and show his pass; as it is considered insulting to approach a government establishment on horseback or mounted.

In cases where any doubt may arise respecting the goods being more or less than specified in the pass, the trouble these revenue authorities give is most vexatious; nevertheless, should any article mentioned in a pass be lost or stolen on the road they are prompt in recovering it. On such a circumstance occurring the conductor of the Kárawán must report it at the nearest Custom-house, giving a description of the goods whatever they may be. The authorities have a stated time for the decision of such matters, and in case the articles are not recovered within the prescribed period, some compensation is allowed, but in kind, not in money.

On a Kárawán or Káfilah reaching the city, or any other place in the Khán's dominions, where duties are leviable, the conductor must report his arrival at the chief Custom-house, stating all particulars, from whence he has come, together with the value, and description of goods he may have brought. On this an officer proceeds to inspect the merchandize, and on goods of superior quality five per cent. on the value is levied, and on commoner descriptions half the above rate.

The city of Táshkend is subject to Kokán, and lies ten stages or *manzils* to the north-west. It was once a very large and rich city, but is now gone to decay. The numerous ruins of mosques and other buildings shows what its former extent must have been.

The city of Kashghár lies south-east from Kokán, and is distant from it ten *manzils* for Kárawán camels. It belongs to Chinese Tartary, is populous, and contains about 50,000 inhabitants. It is surrounded by a fortified wall, which is very strong and lofty, and said to be very ancient. The citadel, which is within the *enceinte*, occupies an area of about two miles, and is garrisoned by 2,500 soldiers, with several pieces of artillery. An army of Chinese troops is also stationed here as being a frontier city. It formerly amounted to 10 or 12,000 men, but lately the force has been considerably augmented, and at present is computed at 30,000 men. The chief cause of this increase, however, appears to be for the purpose of overawing the Muhammadans, who constitute the majority of the inhabitants. Some time previously they created a serious disturbance, in which a great number of Chinese were killed and an immense amount of property

plundered. A strong body of celestial troops was sent to quell this revolt, and the faithful were severely punished.

The residence of the governor, who is styled Umbán, is called the Gúl Bágh, distant about two miles from the city, between which a portion of the troops are encamped.

The city gates are closed from sunset to sunrise, as is the custom throughout Northern China. Each soldier of the city police, which is a well organized body of men, is provided with two pieces of wood called a *chang*, and at the termination of each watch of about three hours, he produces a sound by striking them together in a peculiar manner, and afterwards calls out the hour of the night or day. These soldiers go by the general name of Hallátṭs.

The country is very productive, and the city, the houses of which are regularly laid out, is surrounded by numerous gardens. There are six gates which are defended by cannon, and a number of mosques. The chief fiscal authority is vested in a Muhammadan who bears the title of Hákim Beg.

The people are a lively comely race, and the women are remarkably handsome. Merchants may take temporary wives, as in Persia, by entering into a contract for a specific sum during the period of their sojourn in the country. The Káshgháris are also great wine-bibbers, and are very old women in their fondness for a "dish of tea."

The lands depend in a great measure on rain for irrigation, but artificial irrigation is also extensively adopted, and this, from the number of streams running through the country, is by no means difficult. Snow lies on the ground in winter to the depth of two, and sometimes three feet, but never for more than a few days together.

The distance from Káshghár to Yárkand is three *manzils*, of about seventeen miles each. As the country all along the line of route is highly cultivated and exceedingly populous, the different stages are not prescribed to certain places, as between Káshghár and Kokán. The Yárkiang river, also called the Eergo-ú, flows past the city to the north.

Yárkand, which is the largest city of Moghalistán, has two citadels within its walls, one in which the Muhammadan go-

vernor dwells, and the other, on the southern side, where the Chinese chief, who commands the army quartered here, resides.

This force, which is intended to overawe the Yárkandis amounts to about 40,000 men with several guns. This is the largest force the Chinese have in this direction of their empire, and the best and most efficient, being picked men. They are relieved yearly. Of this force, 10,000 are quartered within the city, the remainder in the vicinity.

The police arrangements are similar to those of Káshghár, with this exception, that an equal number of Chinese soldiers are associated with the police in their duties; and one celestial accompanies each of the *cháng nawázán* (ringers or strikers of the *cháng)* as the watchmen already described are called, in his rounds.

Russian Kárawáns come here, and bring all sorts of European manufactures, consisting of hardware in a greater proportion. They take back with them teas, silk, and other articles of Chinese manufacture, but they are not allowed to proceed further east.

From Yárkand, distant fifteen *manzils* or stages to the north-east is Áksú *(ák,* white, sú, river), a city whose wealth and population increase steadily every year. All descriptions of food are excessively cheap, and even when prices are at their maximum, a *maund* and a half of grain, Kábul measure, (about one hundred and twenty pounds English) may be obtained for two shillings. The governor of this city is appointed by the Chinese, but the people are chiefly followers of Islám.

From Áksú to Yílih or Ileh is ten days journey to the north-east. The road is difficult on account of the traveller having to cross the glaciers of the Tiánchán or snowy mountains. A body of fifty men are maintained here by the authorities for the express purpose of assisting travellers over the mountains, and for making roads for their passage through the ice. When a party of travellers reach the foot of the mountains, they proceed in front, and make a road over the ice as they advance, the travellers following close at their heels; and it generally occupies a whole day in crossing the range. So quickly does this track become impassable, that the pioneers, who return on the following day, have generally to clear a new path for themselves. This place is called by the people of the country,

Makán-i-Sarwar jádúgar, or the "dwelling of Sarwar the magician." Showers of rain, and snow storms are of daily occurrence in this vicinity.

Yílih or Ileh contains about 8,000 houses and 40,000 inhabitants, consisting of Chinese and Muhammadans in about equal numbers, whose quarters are quite separated from each other.

The chief authority of the province is styled the Ján Jang or Governor-General, who resides at Kowrah or Kowreh, one stage from Yílih. It contains upwards of 60,000 inhabitants, and a Chinese army of about 40,000 men are located there. The authority above named, is the supreme head of the Muhammadans of Moghalistán, to the west; eastward is the country of Khattai, or Chinese Tartary.

From this latter city to the Russian frontier town of Semí Pulád Oská (Semipolatinsk) the most southerly town of any consequence in Southern Siberia, is twenty-five days' journey through a difficult country almost uninhabited. This mountainous district is rich in silver mines which are profitably worked by the Chinese. They also produce a metal known here by the name of yámbú. Some years since the Russians demanded a share in the profits from these mines on account of their being situated mid-way between the two countries. The Khattais, as the Chinese are called, refused, however, to accede to the demand, giving answer (I here use the very words of my informant) "If you Orús have six laks of soldiers altogether, we have six laks in one place alone, then what occasion is there for us to let you have a share in the mines?"

The town of Semí Pulád Oská contains a population of between 7 and 8,000. It is situated on the right bank of the river Irtisch, which forms the boundary between the two countries, and at the foot of the Altai or golden mountains.

From the frontier city of Kowreh, or Kúrá, distant fifteen stages, is Karán-sher or Kárá-shehr, beyond which, there is a most stringent order not to permit Yáwahs (barbarians), as the Chinese term all foreigners, to pass into the interior. This is a large and populous city with a numerous garrison, or army rather for its protection.

Muliyán is distant from the above place five stages, Kután or Kotán fifteen, and Túfán twenty. To reach Má-chín, from whence

the tea is chiefly brought, it occupies two months and half w
Kárawán; and to reach Jánán, where the China-ware is man
tured, it takes another three months. Beyond the last ment
place is the ocean.

The Chinese are much given to pleasure, and once a year, i
first month, they hold a grand festival which lasts for ten
during which time they give themselves up to all sorts of ple
The festival is called Chághán.

Cottrell in his "Recollections of Siberia," refers to this st
commencing the new year in the following terms: "They
Chinese merchants at Mai-má-chín, the small hamlet where
and the Russians meet to trade, and in which merchants are al
to reside) have, however, learned from their Russian neighbo
appreciate the merits of champaigne, which is drunk in torre
the *white month*. This white month is the beginning of the C
year. * * * * The scene of carousing and
during this month is described as most amusing, and wo
doubtless the best opportunity of seeing the Chinese und
most favourable colours."

The dress of the men of Chinese Tartary is of various c
one suit over the other; and their caps they ornament with a
like the girls of Orgunge, to which according to their mean
attach jewels. Their shoes are of silk with soles of cotton.
women dress much in the same style as those of Kashmir, an
head-dress consists of a cap or turban, which they ornamen
flowers made of coloured silks. All the people use chairs,
they cannot sit comfortably otherwise.

They are of two tribes, the Akh Khattai, and Karah
which signifies in the Túrkí language, the White and the
Chinese. The former shave all round the head, but leave a
the centre, the hair of which when sufficiently long they tw
allow to hang down like a cow's tail. They also shave off th
but retain the moustache. The latter, on the contrary neve

There are two routes from Kashmir to Yárkand and Koká
most direct one is by way of Iskárdoh and along the banks
Shighún river, and over the Musták range of mountains
Hanzí pass. The other, a more round about road, is by

Leh or Ladákh, through the valley of the Shai Yak, as the northern branch of the Indus is named, and over the Karah Korrum mountains, which appears to have been the route followed by the Sayed. There is another route from Leh to the Karah Korrum range, further to the west by way of Núbra, but it is only used when the Shai Yak is too deep to be crossed. The route by Iskárdoh is less than the other by ten stages, but it is only open from the middle of April to the end of October, whilst the Leh route is practicable, though difficult, for the greater part of the year.

Multán, 10th April, 1857.

Memorandum on the Nanga Parbat and other Snowy Mountains of the Himalaya Range adjacent to Kashmir.—By T. G. MONTGOMERIE, *Lt. Engineers, 1st Asst. Gt. Trig. Survey of India, in charge Kashmir Series.*

Colonel Waugh having given me permission to publish the approximate heights and positions of the Nanga Parbat and other snowy mountains fixed by the Kashmir series, I have the pleasure to put at the disposal of the Asiatic Society a memorandum of the same with tables, &c. shewing how the height of the Nanga Parbat has been obtained.

The mean height of 26,629 feet for the Nanga Parbat is approximate, but is not likely to alter materially when all the refinements of computation have been applied.

The height of the stations of the Kashmir series depend upon the N. W. Himalaya series, and as yet the N. W. H. series depends upon the height of the Bauog observatory, which Colonel Waugh has already tested by trigonometrical levelling from sea to sea* over 2,127 miles of hill and plain—a test that has never before been applied or at any rate successfully carried out on such a gigantic scale.

The N. W. H. series thus starting with a verified height has not as yet been tested by a process similar to the above. Before long, however, Colonel Waugh's great geodetical quadrilateral that

* From Calcutta to Bombay and Kurrachee.

embraces the Punjab and Sind will afford the verification desired by completing the circuit from the mean sea level at Kurrachee, round the Punjab and back to the same point.

Though the internal checks on the heights of any G. T. Survey series are in themselves complete, still slight errors may creep in which can only be detected on the completion of the levelling from sea to sea. Hence a small correction may hereafter be applied to the heights of the Kashmir series, though as I before said, it is not likely to affect materially the values that I now send you.

Hitherto the Nanga Parbat, which is also called Dayarmur, has been put down as 19,000 feet above the sea, being nearly a mile and a half below its actual elevation. Rather a bad shot for conjectural geography.

Though by no means equal to mount Everest,* still the Nanga Parbat is as much the king of the northern Himalayas as mount Everest is the king of the southern Himalayas.

My series has already added to the G. T. Survey all the peaks to the south of the Indus, and now the G. T. Survey may be said to have fixed all the peaks in the Himalayas with the exception of a few about the sources of the river Indus.

During my three days' residence on the snowy mountain Haramook, at upwards of 16,000 feet above the sea, I had several fine views of the Karakooram range and of the ranges to the north of the Indus. Amongst others two very fine peaks were visible beyond the general outline of the Mustagh and Karakooram ranges. These two peaks promise to be high. They were well but faintly defined against the sky being probably about 150 miles from me. I hope to have the pleasure of sending you their heights at the beginning of next year.

The memorandum includes several well known mountains such as "Ser" and "Mer," Haramook, Baltal, &c. The heights now given do not agree with those that have hitherto been taken for granted by former explorers.

I trust the accompanying heights and positions may prove a useful and interesting contribution to accurate geograghy.

Dhera Dhoon, 27th January, 1857.

* Déo-dhúnga.—Ed.

The geographical co-ordinates of the Himalayan peaks enumerated in the accompanying list have been derived from the geodetical operations of the Kashmir meridional series of the G. T. Survey of India.

This series commenced by order of Colonel Waugh in 1855, emanates from a side of the north-west longitudinal series in the low ranges north of Sealkote.

The triangulation of the series has been carried across the snowy ridge of Chattardhar, over the Pir Panjal and the great range to the north of Kashmir, by means of symmetrical quadrilaterals and polygons.

Luminous signals* have been used throughout, and the rigorous system of the G. T. Survey of India has nowhere been abated, notwithstanding the physical difficulties presented by the snowy ranges, and the severe climate on their summits, so trying to the natives of India employed as lampmen and heliotropers.

The Nanga Parbat or Dayarmur is a snowy mountain to the north of Kashmir, midway between that valley and the river Indus. The splendid mass of snow presented by this peak and its subordinate pinnacles can be seen to the best advantage from the western side of Kashmir, when it is viewed across the great Walpar lake. The upper portion of the mountain for 5,000 feet is precipitous, and the neighbouring ranges never attain an altitude of more than 17,000 feet, consequently this magnificent peak, rising to an elevation of 26,629 feet above the sea, naturally forms a noble object† in whatever aspect it is viewed.

Among the remaining mountains there are many fine peaks, the most remarkable being "Ser" and "Mer," twin giants, the former white and the latter dark, because it is too precipitous to retain much snow on the Kashmir side. Ser and Mer are also called Nana Khana, as well as Dum Huy and Pajah Huy, besides other appellations. These peaks and all from No. 1 to No. 12 are well known to those sportsmen who shoot ibex in the Wardwan valley.

* Heliotropes and lamps.

† For a beautiful and characteristic sketch of this mountain, vide page 44, of Major (now Lt.-Colonel) Cunningham's work on Ladak.

Baltal, Haramook, the highest points of the Pir Panjal and Nos. 16 to 27 inclusive are visible from various parts of Kashmir.

The position and heights of these mountains have been determined by observations taken at the principal stations of the Kashmir series. For instance the Nanga Parbat has been determined by observations with a 14 inch* theodolite from eleven principal stations at distances varying from 43 to 133 miles and at heights ranging from 7,700 to 16,000 and odd feet.

Four or more independent computations have been made for each point, the accompanying abstract of the results of the computations of the Nanga Parbat may be taken as a fair specimen. In this instance, the latitude and longitude have been derived from seven independent deductions, the heights from eleven, and the distances from the same number of triangles. The extreme difference from the mean is only one-tenth of a second in latitude and longitude, and only 25 feet in height, being as accordant as could be expected, considering that it is an unmarked peak,† that the attraction of the mountains is very great, and that no doubt, between observations, variations did occur caused by falls of snow at one time, and by the melting of the same at another.

The refraction used for completing the height of the Nanga Parbat as well as of the other peaks has throughout been determined practically from my own reciprocal observations between principal stations, that is to say from observations to and from those elevated points of the Himalayan range, which were actually occupied for the purpose of observation while extending the series of great triangles across the Pir Panjal and the great snowy barrier to the north of the valley.

The skeleton chart shows the geographical position of the Nanga Parbat and the other peaks in the accompanying list. The position of Murree, Jhelum, Sealkote, Srinagar, and other places being added for the sake of illustration.

* Troughton and Simms, No. 5, G. T. S.

† The term unmarked in the G. T. S. means a peak in which no signal mark has been erected.

Abstract of the position of the Nanga Parbat.

No.	Fixed Stations.	Deduced Stations.	Latitude.	Longitude.	Remarks.
			° ′ ″	° ′ ″	
1	From Safapoor, H. S. ..	Nanga Parbat.	35—14—21.4	74—37—52.5	
2	„ Kaj Nag, H. S. ..	.... do.	21.5	52.4	
3	„ Manganwar, H. S.	.... do.	21.6	52.6	
4	„ Marinag, H. S. ..	.... do.	21.6	52.5	
5	„ Ismail de dori, H.S.	.... do.	21.5	52.5	
6	„ Haramook, H.S...	.... do.	21.5	52.4	
7	„ Hant, H. S.....	.... do.	21.6	52.5	
	Means, ...	.....	35—14—21.5	74—37—52.5	

Compared by W. G. Beverley, and T. J. M.

Memorandum of Heights and Positions of the Nanga Parbat and other Mountains.

Names of Mountains.	Mean Height.	Mean Latitude.	Mean Longitude.	Remarks.
	feet.	o ′ ″	o ′ ″	
Nanga Parbat Snowy Peak, ...	26,629.1	35 14 21.5	74 37 52.5	Or Dayamur.
Ser ditto, ...	23,406.9	33 58 56.1	76 3 59.1	} Or Nana, Khana, &c.
Mer ditto, ...	23,264.4	34 0 47.7	76 5 51.4	}
Baltal ditto, ...	17,839.4	34 9 55.4	75 22 10.3	Or Gwashbrari.
Haramook ditto, ...	16,902.9	34 24 5.6	74 57 3.1	
Kashmir Series, Snowy Peak, No. 1, ...	16,662.0	33 11 18.8	76 5 35.3	
Ditto, „ 2, ...	19,906.0	33 19 18.1	76 20 22.7	
Ditto, „ 3, ...	21,288.6	33 27 18.9	76 11 50.9	A Snowy Cone.
Ditto, „ 4, ...	20,054.2	33 27 22.5	76 7 23.8	
Ditto, „ 5, ...	21,059.3	33 30 15.4	76 5 30.6	A fine Snowy Cone.
Ditto, „ 6, ...	21,584.8	33 36 26.6	76 10 25.8	
Ditto, „ 7, ...	18,739.3	33 34 53.1	76 1 39.0	
Ditto, „ 8, ...	20,988.0	33 44 1.6	76 9 28.8	
Ditto, „ 10, ...	19,841.3	34 0 22.4	75 52 58.3	
Ditto, „ 11, ...	19,597.0	34 6 14.9	75 45 42.1	
Ditto, (Poormandal ke Sir,) No. 12, ...	17,051.9	34 3 37.3	75 33 49.1	[Kashmir & Wardwan. East of a pass between
Kashmir Series, Snowy Peak, No. 16, ...	17,014.5	34 56 7.4	74 21 43.1	
Ditto, „ 17, ...	.....	34 53 30.6	74 18 59.9	
Ditto, „ 19, ...	20,740.3	35 7 55.7	74 28 42.2	
Ditto, „ 21, ...	14,874.5	34 48 41.7	74 5 54.3	Above Kháğán.
Ditto, „ 22, ...	....	34 46 49.4	73 55 51.1	Ditto.
Ditto, (Peer ke dheri), No. 23, ...	16,486.6	34 43 30.9	73 46 0.2	Ditto.
Ditto, (Bijti-ke-Sir), No. 24, ...	.....	34 38 18.6	73 43 44.4	Ditto.
Ditto, (Neelá) No. 25,	15,534.5	34 35 55.1	73 41 43.4	Ditto.
Kashmir Series, Snowy Peak, No. 26, ...	16,227.8	35 0 45.7	74 13 22.4	
Ditto, „ 27, ...	.....	34 56 26.8	74 34 6.6	
Ditto, (*d*), ...	18,052.4	34 22 15.4	75 29 29.7	
Ditto, (*e*), ...	17,320.7	34 13 34.4	75 32 4.5	Above the Ambernáth caves. [Glacier.
Ditto, (*f*), ...	17,903.7	34 13 43.9	75 37 40.3	Above the Matchahoy
Ditto, (*i*), ...	17,642.7	34 30 50.3	75 38 30.4	In the Hembaps Range.
Ditto, (*j*), ...	17,369.3	34 31 34.4	75 44 27.6	Ditto, ditto.
Ditto, (*x*), ...	19,376.7	34 17 23.6	75 49 59.2	About 8 miles S. W. of Dras fort.

Memorandum of Heights, &c., (continued).

Names of Mountains.	Mean Height.	Mean Latitude.	Mean Longitude.	Remarks.
	feet.	o ′ ″	o ′ ″	
Pir Panjal Snow Pk. Bárá Sangah, ...	....	33 57 54.4	75 26 18.3	In the range between Kashmir and Wardwan.
Ditto ditto α, ...	14,580.6	33 48 54.3	75 29 51.9	Ditto.
Ditto ditto β^1, ...	....	33 36 31.5	75 34 33.8	Ditto.
Ditto ditto β^5, ...	14,545.6	33 26 5.9	75 31 31.6	Ditto.
Ditto ditto β^6, ...	14,187.0	33 31 59.7	75 32 10.4	Ditto.
Ditto ditto Ahertátopá,	13,042.5	33 23 56.8	75 22 21.5	G. T. Station.
Ditto ditto Kol Nárwá,	12,746.4	33 30 21.8	75 8 24.5	Ditto.
Ditto ditto Didyum, ..	14,952.2	33 24 49.5	75 3 15.6	Ditto seen from Siálkote.
Ditto ditto Bármá Sákul, ...	15,482.7	33 28 55.7	74 52 44.2	Three peaks above the Kosa Nag, called also Koserin Kutur seen from Siálkote.
Ditto ditto Tikhiár, ..	15,304.6	33 29 52.0	74 39 42.2	..... seen from Siálkote.
Ditto ditto Táttá kúti,	15,523.7	33 44 54.9	74 30 30.6	
Ditto ditto (y), ...	15,132.7	33 54 23.6	74 28 19.1	
Northern Panjal Hánt,	13,492.8	34 36 48.0	74 39 16.2	G. T. Station above the road from Bundipoor to Gurys.
Ditto Marinág, ...	11,827.5	34 38 47.2	74 14 46.2	G. T. Station.
Ditto Ismail de dori,..	12,643.2	34 29 44.5	73 57 44.3	Ditto.
Ditto Peak, No. 2,....	14,338.1	34 21 20.3	73 59 17.6	
Ditto Satkolá,..	14,038.8	34 20 41.8	74 0 23.9	G. T. Station.
Ditto Káj Nág, No. 1,	14,437.8	34 13 48.7	74 4 12.6	Highest Peak.
Isle of Chinárs, ...	5,209.4	34 8 0.9	74 53 40.9	In city lake of Kashmir.
Lanká Island,.....	5,186.6	34 22 9.1	74 39 48.0	In Great Walar Lake.
Takht-i-Sulaimán, ...	6,266.0	34 4 46.3	74 53 8.0	Base of kalis of temple.
Islámábád Hill, ...	5,896.4	33 43 46.3	75 12 6.9	G. T. Station on top.
Shapiyon Hill, ...	7,048.9	33 42 43.9	74 53 48.5	Ditto.
Sopoor Fort, ...	....	34 17 1.4	74 30 47.6	East Bastion.

Farther Observations taken at Kanúrí Nár H. S. by Lieut. Brownlow, Engrs. to the two peaks observed at Haramook H. S. by Lieut. Montgomerie, Engrs. in September, 1856, give the following results.

		Height in feet.	Distance in miles.
Karakoram No. 1	from Haramook H. S.	25,393.7	116.7
	„ Kanúrí Nár, ...	25,438.5	
	Mean,...	25,416.1	
Karakoram No. 2	from Haramook H. S.	27,914.4	136.5
	„ Kanúrí Nár, ...	27,942.2	
	Mean,...	27,928.3	

The most northerly of the [illegible]

PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL,

FOR JUNE, 1857.

At a monthly General Meeting of the Asiatic Society, held on the 3rd instant, Babu Ramgopaul Ghose, Vice-President, in the chair.

The proceedings of the last meeting were read and confirmed.

Presentations were received—

1.—From Mr. C. Gubbins, C. S., a fragment of a carved brick, found among the Sarnath ruins, near Benares.

2.—From the Bavarian Royal Academy of Sciences, the latest publications of the Academy.

3.—From Professor E. B. Cowell, on behalf of the translator, Mr. Fitzgerald, a copy of a translation of Salámán Absál of Jámi.

4.—From Major H. L. Thuillier, a sketch of the country between Agra and Umballah with a sketch of Delhi.

Dr. William Crozier, B. M. S., was named for ballot at the next meeting, proposed by Dr. Spilsbury and seconded by Mr. Atkinson.

The Council announced, that in consequence of ill-health, Dr. Spilsbury had sent in his resignation of the office of Vice-President.

On the motion of Major Strachey, seconded by Mr. Samuells, the following resolution was passed:—

"That the Society have heard with great regret that the state of Dr. Spilsbury's health has rendered it necessary that he should withdraw from further active participation in the management of the Society, of which he is one of the oldest and most valued members, and that this resolution be communicated to him by the Secretary."

The Council applied for a vote for a sum not exceeding 500 Rs., for the printing of Dr. Falconer's Catalogue of the tertiary fossils in the Society's Museum.

Some conversation ensued in reference to the amount of the estimate given by the printer, and the generally high rate charged by the Baptist Mission Press for the printing of the Society's publications. Eventually Dr. Mouat offered to enquire in communication with the Secretary into the comparative charges of other printers in Calcutta, and to report, if authorized to do so, to the Society.

Dr. Mouat's offer was accepted with thanks, and the proposed vote was postponed until his report should have been presented.

The Librarian submitted his usual monthly report.

Major R. Strachey read a paper, being part of a narrative of a "Journey into the Tibetan province of Gugé, on the frontier of Kumaon; and to the sacred lakes of Manasarowar and Raksa Tal."

On the motion of the Chairman, a vote of thanks was given to Major Strachey for his valuable and interesting paper.

The ordinary business being concluded, the meeting was made special for the consideration of Mr. Oldham's proposition, to reduce the rate of the subscriptions of non-resident members.

The Secretary stated that, owing to a mistake which had occurred in the office, non-residents had been allowed to send in their votes up to the 10th instant. He therefore proposed, on the part of the Council, that the special meeting should be continued by adjournment to the first Wednesday in July, to be then held after the business of the ordinary monthly meeting has been disposed of.

Agreed to.

The meeting then separated.

Library.

The Library has received the followiug accessions during the month of May last.

Presented.

Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften. Philos-Histor. Classe. Band XX. heft 2 and 3, Band XXI. heft 1 and 2, 8vo.—By the Academy.

———————— Mathe-Natur Classe, Band XX. heft 2 and 3, Band XXI. heft 1; 8vo.—By the same.

Register zu den zweitne 10 Bänden der Sitzungsberichte (Band 11 to 20) der Philos-histor. Classe, der aka &c.—By the same.

——— ditto ditto Mathe-Natur.—By the same.

Denkschriften der ditto ditto, Philos-Histor. Band VII. 4to.—By the same.

Archiv fur kunde österreichischer Geschicts-quellen. Band XVI. heft 2, 8vo.—By the same.

Fontes Rerum Austriacarum. Ditto ditto Histor. commission. Band XI. abth 2 8vo.

Notizenblatt, Nos. 15 to 24, 1856.—By the same.

Selections from the Records of the Madras Government, No. XXXIX. —Report upon the Government Central Museums and the Local Museums in the provinces for 1855-56.—By the Bengal Government.

——— ditto of the Government of India (Public Works Department) No. XXII. on Lightning Conductors & Powder Magazine.—By the Government of India.

——— ditto North-Western Provinces Vol. II. on Irrigation, 2 Roads, 3 Bridges, 4 Miscellaneous Works.—By the Government of Agra.

——— ditto of the Bombay Government No. XII. Sattara Territory. —By the Government of Bombay.

Madras Journal of Literature and Science, Vol. I. Nos. 1 and 2, New series.

Vogel's Disorders of the Blood, Translated and edited by Babu Chunder Coomar Dey, 8vo.—By the Babu.

Report on the Elliot Marbles in the Madras Museum, *Pamphlet.*—By the Curator of the Museum.

Reports of the Juries of the Madras Exhibition of 1855.—By the Madras Government.

Report (corrected) of proceedings of a Public Meeting at the Town Hall, Calcutta, in favor of the extension of the jurisdiction of the Mofussil Criminal Courts.—By the Committee appointed by the Meeting.

Salámán and Absál, an allegory translated from the Persian of Jámi, by E. Fitzgerald.—By Professor E. Cowell.

The Calcutta Christian Observer for May, 1857.—By the Editors.

The Oriental Christian Spectator for April, 1857.—By the Editor.

The Oriental Baptist for May, 1857.—By the Editor.

The Upadeshák for May.—By the Editor.

A Map of the country between Agra and Umballa with a Sketch of Delhi.—By Major H. L. Thuillier.

Purchased.

Brande's Manual of Chemistry, 2 Vols. Royal 8vo.

——— Dictionary of Science, Literature, and Art: comprising the history, description, and scientific principles of every branch of human knowledge; with the derivation and definition of all the terms in general use, 8vo. *London*, 1853.

Tomlinson's Cyclopedia of Arts and Science, 2 Vols., Royal 8vo.

A lecture on Modern Investigations on Ancient India, delivered in Berlin, March 4, 1854. By Professor A. Weber. Translated from the German by F. Metcalfe, *pamphlet*, 25* copies.

GOUR DA'S BYSA'CK,

1*st June*, 1857. *Librarian and Asstt. Secy.*

LIBRARY.

The Library has received the following accessions during the month of June, 1857.

Presentations.

Indische Skizzen. Vier bisher in Zeitschriften zerstreute Vorträge und Abhandlungen. Von A. Weber, Berlin, 1857, 8vo.—BY THE AUTHOR.

A lecture on Modern Investigations on Ancient India, delivered in Berlin, March 4, 1854. By Professor A. Weber. Translated into English by F. Metcalfe.—BY PROFESSOR A. WEBER.

Bijdragen tot de Taal-land-en Volkenkunde von Neêrlandsch Indië. Vierde Deel, Nos. 1, 2, 3 and 4.—BY THE ROYAL INSTITUTE OF NEERLANDSCH INDIË.

Einladung zur Akademischen feier des Geburtsfestes Seiner Majestät des königs Wilhelm von Württemberg. Abhandlung über den Atharva Veda von Dr. Rudolf Roth. *Pamphlet.*—BY THE AUTHOR.

Documents and Facts illustrating the origin of the Mission to Japan, authorized by Government of the United States. May 10, 1851, *Washington* 1857, a pamphlet.

A Catalogue of the Bibliotheca Orientalis Sprengeriana, *Giessen* 1851, *pamphlet.*—BY DR. A. SPRENGER.

Sanskrit-Wörterbuch herausgegeben von der Kaiserlichen Akademie der Wissenschaften. Bearbeitet von Otto Böhtlingk und Rudolph Roth. Zweiter Theil, Bogen 21-30.

* 24 copies for sale, at 1 R. per copy.

Monatsbericht der Königlichen Preuss Akademie der Wissenschaften zu Berlin. November and December, 1856. *Berlin*, 1857.—By the Academy.

The Indian Annals of Medical Science, No. VIII. April 1857.—By the Editor.

The Physical Geography of Western Tibet, by Capt. H. Strachey. *Pamphlet.*—By Major R. Strachey.

Report of the Director of Public Instruction in the Lower Provinces for the 2d quarter of 1856-57, i. e. from August to October, 1856.—By the Director.

Selections from the Records of the Bombay Government, No. XLII. Report on Capt. W. L. Merewether with other papers relating to the enlargement of Bigaree Canal in Upper Sind.—By the Bombay Govt.

Journal Asiatique, No. 34.—By the Asiatic Society of Paris.

Proceedings of the Royal Society No. 25, Vol. VIII.—By the Society.

Report of the Results of the Administration of Salt Department during 1855-56.—By the Bengal Govt.

Half yearly Report of the Committee of the Bengal Chamber of Commerce, 30th April, 1857.—By the Chamber of Commerce.

The Oriental Baptist for June, 1857.—By the Editor.

The Calcutta Christian Observer for June, 1857.—By the Editors.

The Oriental Christian Spectator for May, 1857.—By the Editor.

The Vividhártha Sañgraha, Nos. 37 and 38.—By Babu Rajendralal Mittra.

Exchanged.

The Athenæum, for March and April, 1857.

The London, Edinburgh and Dublin Philosophical Magazine and Journal of Science, Vols. 86 and 87, April and May, 1857.

The Calcutta Review, No. 55 for March, 1857.

Purchased.

Literary Gazette, Nos. 2096 to 2104.

Revue des Deux Mondes, for 15th March and 1st April, 1857.

Comptes Rendus, Nos. 8 to 17; also Nos. 17 to 19 of 1856.

Mécanique Industrielle, Memoire sur, &c. &c. par M. Seguin Ainé. Paris, *pamphlet*, 1857.

Journal des Savants for March and April, 1857.

The Annals and Magazine of Natural History, Nos. 112 and 113, April and May, 1857.

Annales des Sciences Naturelles, No. 6, Tome V. and No. 1, Tome VI.

Mémoires sur les Contrées Occidentales, traduits du Sanscrit en Chinois, en l'an 648 par Hïouen-Thsang, et du Chinois en Français par M. Stanislas Julien. Tome I. Paris, 1857.

Codices Orientales Bibliothecæ Regiæ Hafniensis, jussu et auspiciis Regiis enumerati et descripti. Paris Tertia, Codices Persicos, Turcicos, Hindustánicos, &c. continens. Hafniæ, pamphlet, 1857.

Revue et Magasin de Zoologie, Nos. 2 and 3 of 1857.

Revue des Deux Mondes, 1st and 15th April, and 1st May, 1857.

The American Journal of Science and Arts, No. 68, March 1857.

The Natural History, Review No. II., April 1857.

The Edinburgh Review, No. 214, April 1857.

The Quarterly Review, No. 202, Ditto.

The Westminster Review, No. 22, April 1857.

GOUR DA'S BYSA'CK,
Librarian and Asst. Secy.

FOR JULY, 1857.

At a Monthly General Meeting of the Asiatic Society held on the 1st instant,

Major R. Strachey, Senior Member present, in the chair.

The proceedings of the last meeting were read and confirmed.

Dr. William Crozier, B. M. S., duly proposed and seconded at the last meeting, was balloted for, and declared elected.

The Council announced that they had appointed Major Strachey a Vice-President in the place of Dr. Spilsbury resigned, subject to the confirmation of the Society.

The report of Dr. Mouat on the comparative charges of the printing Presses in Calcutta was taken into consideration; and, after some discussion, a vote was agreed to for a sum not exceeding 500 Rs., as proposed by the Council at the last meeting, for the printing of Dr. Falconer's catalogue of tertiary fossils in the Society's Museum, subject to the condition that the lowest eligible tender be accepted.

Communications were received—

1st.—From Bábu Rádhánáth Sikdár, an abstract of the Meteorological Register kept in the Office of the Surveyor General for the month of March last.

2nd.—From Mr. Theobald, Jr., a paper entitled "Notes on the distribution of some of the land and fresh water-shells of India."

3rd.—From Lt. Raverty, notes on Kokan, Kashgar, Yarkund and other places in Central Asia.

The Librarian and the Zoological Curator submitted their usual monthly reports.

Special Meeting.

The ordinary business being concluded, the special meeting, continued by adjournment from 3rd June last, was resumed. A sufficient number of members not being present to decide a question involving an alteration of the rules, a conversation arose as to the proper course to be pursued.

After considerable discussion Major Thuillier moved, seconded by Bábu Rájendralál Mittra—

"That this meeting not consisting of the number of members required by rule 45, the proposal of Mr. Oldham for reducing the subscription of non-resident members cannot be considered, and that the motion be therefore dropped."

Agreed to.

The proceedings then terminated.

LIBRARY.

The following accessions have been made to the library during the months of July and August last.

Presented.

Sitzungsberichte der kaiserlichen Akademie der Wissenschaften, Philos-Histor Classe, Band XXI. heft 3, Band XXII. 1-2.—BY THE PRUSSIAN ACADEMY OF SCIENCES AT WIEN.

———— Math-Natur Classe Bánd XXII. heft 1-3, and Band XXIII. heft 1.—BY THE SAME.

Denkscriften der kaiserlichen Akademie der Wissenschaften, Mathematisch. Natur. Classe Band XII.—BY THE SAME.

Archiv für kunde österr Geschichtsquellen, Band XVII. heft 1-2, Band XVIII. heft 1.—BY THE SAME.

Fontes Rerum Austriacarum, Band X, Abth. 2, and Band XIII. Abth. 2.—By the Same.

Monumenta Habursgica, 2 Abth.—By the Same.

———— Conciliorum Generalium Seculi Decimi Quinti, Tome I. Royal 4to.—By the Same.

Almanach der kaiserlichen Akademie der Wissenschaften, 1857.—By the Same.

Las Historias Del Origen de los Indios de esta Provincia de Guatemala, Traducidas de la lengua quiche al castellano para mas comodidad de los ministros del s evangelio Por E. R. P. F. F. Ximenez, Por E. Dr. C. Scherzer, 8vo. Vienna, 1857.—By the Academy.

The Indian Annals of Medical Sciences or Half-yearly Journal of Practical Medicine and Surgery, No. VIII. April, 1857.—By the Editor.

Selections from the Records of the Bombay Government, No. XLII. —By the Bombay Government.

Report on the Survey Operations of the Lower Provinces from 1st Oct. 1855 to 30th Sept. 1856.—By the Bengal Govt.

Maps of the Administration Report for the year 1855-56, Part III.—By the Same.

The Proceedings of the Royal Society, Vol. VIII. No. 28.—By the Royal Society of London.

The Infant Treatment in Vernacular, 12mo. *Calcutta,* 1857.—By Babu Shib Chundra Deb.

Mr. David Smith's Report of the Sigrowlee and Kurhurbaree Coal Fields, pamphlet.—By the Government of India, Public Works Department.

The Oriental Baptist for July and August, 1857.—By the Editor.

The Calcutta Christian Observer for July and August, 1857.—By the Editors.

The Oriental Christian Spectator for June and July, 1857.—By the Editor.

The Vividhárta Sañgraha, Nos. 37, 38 and 39.—By Babu Ra'jendra-la'l Mittra.

A letter to the Members of the Photographic Society in Defence of Bábu Rájendralál Mittra.—By a Member.

Natuurkundig Tijdschrift voor Nederlandsch Indië, Deel XII. Derde Serie Deel II. afl. 4, 5 and 6, and Deel. III. afl. 1 to 4.—By the Batavian Society.

Zeitschrift der deutschen morgenländischen Gesellschaft, Elfter Band, heft 2.—By the German Oriental Society.

Die Lieder Des Hafis, Persisch mit dem commentare des Sudi Herausgegeben von Hermann Brockhaus, Band I. heft 3 and 4.—By the Editor.

Deutsches Wörterbuch von Jacob Grimm und Wilhelm Grimm, 2 Band Lieferung 5, Der—Doch. *Liepzig.*—By the Authors.

Monographie des Guêpes Sociales, ou de la Tribu des Vespiens, ouvrage faisant suite a la Monographie des Guêpes Solitaires, par Henri de Saussure, Cahier 2nd and 3rd, *pamphlet,* and 1 vol. of plates.—By the Author.

Mélanges Hyménoptérologiques par Henri de Saussure, 1 Fasc. *pamphlet,* 1854.—By the Author.

Nouvelles Considérations sur la nidification des Guêpes par H. de Saussure.—By the Author.

Castréns (M. Alexander) Versuch einer Burjätischen Sprachlehre nebst Kurzem Wörterverzeichniss, Im auftrage der kaiserlichen Akademie der Wissenschaften herausgegeben von Anton Schiefner, *St. Petersburgh,* 1857.—By the Academy.

The Journal of the Indian Archipelago and Eastern Asia, edited by J. R. Logan, New Series. Vol. I. No. 11, Vol. II. No. 1, 2 copies.—By the Editor.

Vocabulary of Dialects of Aboriginal Tribes of Tasmania, by Joseph Milligan, No. 7, *sheets.*—By the Royal Society of Tasmania.

Meteorological Tables kept at the Observatory of Hobart Town, Tasmania, January to May, 1857.—By the Same.

Bhuddhism and Buddist Pilgrims. A review of M. Stanislas Julien's "Voyages des Pelerins Bouddhistes" together with a letter on the original meaning of Nírvâna" by M. Muller.—By the Reviewer.*

Annalen der Chemie und Pharmacie. Herausgegeben von F. Wöhler, Justus Liebeg und Hermann Kopp, from January to April, 1857.—By the Chemical Society at Liepzig.

Catalogue of the Geological Museum in connexion with the Geological Survey of India, Calcutta, Part I. Minerals, 1857.—By the Director of the Geological Survey in India.

Selections from the Records of the Government of India (Home Department) No. XXIII. Report upon the present condition and future prospects of Tea Cultivation in the North Western Provinces and in the Punjaub.—By the Govt. of India.

* Twenty copies for sale at 1 Rupee each.—Apply to the Librarian, Asiatic Society.

Exchanged.

The London, Edinburgh and Dublin Philosophical Magazine of Science for May and June, 1857, Nos. 87 and 88.

The Athenæum, for April and May, 1857.

Purchased.

Comptes Rendus, Nos. 11 to 21.

Journal des Savants for April and May, 1857.

Revue et Magasin de Zoologie, Nos. 2, 3 and 4 of 1857.

Revue des Deux Mondes, 15th April, 15th May and 1st June, 1857.

The Natural History Review, No. II. for April, 1857.

The Annals and Magazine of Natural History, Nos. 113 and 114 for May and June, 1857.

The American Journal of Science and Arts, Nos. 68 and 69.

Annales des Sciences Naturelles, Tome V. No. 6 and Tome VI. No. 1.

Literary Gazette, Nos. 2105 to 2108.

GOUR DA'S BYSA'CK,
Librarian and Asst. Secy.

1*st September*, 1857.

Report of Curator, Zoological Department, July Meeting, 1857.

SIR,—But few donations have been received since my last Report.

1. From T. C. Jerdon, Esq. Nagpore. A small spiny-tailed Swift, the ACANTHYLIS SYLVATICA, Tickell, *J. A. S.* XV, 284, obtained by Major S. R. Tickell in Central India, and subsequently in greater abundance near Darjiling. It is well distinguished from the small Pinang species, Ac. LEUCOPYGIALIS, nobis, *J. A. S.* XVIII, 809, and structurally by having a more compressed bill, and by having the tail formed as in the large Ac. NUDIPES of the Himaláya; whereas the other has the more Woodpecker-like tail of Ac. GIGANTEA, with the medial spines much more developed. Both are rare species in collections, if indeed a specimen of either occurs elsewhere than in our own museum.

2.—W. T. Blanford, Esq. A fine specimen of the RHIZOMYS BADIUS, Hodgson, or 'Bambu Rat' of the Nipal and Sikhim *tarái*; also an example of SUYA ATROGULARIS, Moore, *P. Z. S.* 1854, p. 77 (a species new to the Society's museum), and a few other bird-skins from the vicinity of Darjiling.

Subsequently, Mr. Blanford has favored us with the following specimens, also from Darjiling.

Of mammalia, RHINOLOPHUS TRAGATUS, Hodgson (very dark-coloured), CORSIRA CAUDATA, (Hodgson,—distinct from C. ALPINA—*Sorex alpinus*, Schinz),* SORICULUS NIGRESCENS, TALPA MICROURA, Hodgson (since set up as a skeleton), specimens in spirit of SCIURUS LOKROIDES and Sc. MCCLELLANDII, and a skeleton (imperfect) of SCIUROPTERA ALBONIGRA.

Of reptiles, CALOTES (?) TRICARINATUS, MOCOA SIKIMENSIS, CALAMARIA FUSCA, nobis (several, the largest of them 16 in. long), DIPSAS (?) COLUBRINA, *n. s.*, TRIGONOCEPHALUS ——— (?), TR. DIPSAS, var. (anterior half greenish-grey, with black-bordered scales), TRIGONOCEPHALUS NILGIRIENSIS, POLYPEDATES MARMORATA (*J. A. S.* XXIV, 188, of which *Hyla obtusa*, nobis, *J. A. S.* XII, 931, proves to be the young).

3.—From myself. Carcass of a fine male *Sia-gosh* (FELIS CARACAL), which has been prepared as a stuffed specimen.

Lastly, may be noticed a purchased skin, from the neighbourhood of Darjiling, of the remarkably handsome and curiously coloured Bat, NYCTICEJUS ORNATUS, nobis, *J. A. S.* XX, 159, 517, where described from the Khâsya hills. The present beautiful specimen had less of the pale colour on the membranes than that originally described; it being confined chiefly to the interfemoral, and to the margin of the fore-arms. Fur of the upper-parts pale fulvous with bright ruddy tips, darker laterally and posteriorly: an interrupted pale median line from the occiput, composed in part of pure white tufts, one at the occiput, another between the shoulders, and a third on the middle of the back; corresponding to these are three white lateral tufts on each side, the first being upon the shoulder: lower-parts subdued white, with a broad dark brown collar or gorget, continued downward as a wide median streak upon the belly; from the shoulders, the white is continued round as a second gorget, interrupted in the middle, but prolonged down each side of the pectoral region, and approximating posteriorly; being bordered outwardly with dark brown at the base of the volar membrane. The pencil, however, is required to aid the pen to convey a vivid idea of the markings of this singularly handsome species, which may well bear the popular designation of 'Harlequin Bat,' a name that should conduce to its facile recognition.

E. BLYTH.

* Contrary to the opinion of Mr. R. F. Tomes, *J. A. S.* XXIV, 362. *N. B.* The small Shrew noticed in *J. A. S.* XXIV, 188, as having been found in a cellar in Madras, I find, from a memorandum, was returned to the Hon'ble W. Elliot, Madras *C. S.*

FOR SEPTEMBER, 1857.

The Monthly General Meeting for September was held on the 2nd instant.

Major H. L. Thuillier, Senior member present, in the Chair.

The proceedings of the July meeting were read and confirmed. The August meeting separated without proceeding to business, in consequence of there not being a sufficient number of members present to form a quorum.

Presentations were received—

From the Austrian Academy of Sciences at Vienna, the latest publications of the Academy.

Two coins found at Bali, and purchased for the Society's Cabinet, were exhibited. They were, one of Hossein Shah of Bengal, 917 H. and the other of Nuserat Shah, son of Hossein Shah, 930 H.

Robert Schlagintweit, Esq. was proposed as a corresponding member of the Society by the President, seconded by Mr. Atkinson.

Notes from the following gentlemen, announcing their wish to withdraw from the Society, were recorded.

P. W. LeGeyt, Esq., C. S., D. G. Nicholson, Esq. J. F. Curtis, Esq., A. R. Young, Esq., C. S., and W. G. Young, Esq., C. S.

The nomination, which the Council announced in July last, of Lieut.-Col. R. Strachey, as a Vice-President of the Society, in place of Dr. Spilsbury deceased, was confirmed.

Communications were received—

1. From Babu Radá Nauth Sikdár, an abstract of the Meteorological Register kept in the Office of the Surveyor General for the months of April, May and June last.

2. From Mr. Piddington, "Notes for Ships and Steamers lying in the stream, or at moorings at Calcutta, or near it, and for River boats, on the approach of a Cyclone.

3. From Ditto "Practical notes on the best mode of obtaining the highest duty from Burdwan Coal as compared with English Coal."

4. From Mr. H. L. Inman, C. E., forwarding an account and diagram of the different deposits passed through in proceeding from the right bank of the Indus to the Coal deposits in the Sehware district of Kurrachee.

5. From Major Thuillier, forwarding a paper by Lieut. Montgomerie, Engineers, on the heights of certain snowy peaks of the Himalayah in the neighbourhood of Kashmir.

6. From the Royal Society of Tasmania, the Meteorological tables kept in the Observatory of Hobart Town during the months of January to June last.

7. From the Government of India through Mr. Under Secy. Chapman, copies of papers relative to two Meteoric stones which fell near the Village Parnallee, in the Madura district, Madras:—

From R. J. SULLIVAN, *Esq.*,

To H. A. MURRAY, *Esq.*,

MY DEAR MR. MURRAY,—I forward herewith a letter from the Revd. J. Taylor, an American Missionary.

Perhaps Lord Harris might wish some steps to be taken about one or both the Aërolite stones mentioned in the letter, the larger one appears a phenomenon in point of size.

Should His Lordship require any one or any portion for the Museum, I can procure it.

(Signed) R. J. SULLIVAN.

Madura, 28*th March*, 1857.

From H. S. TAYLOR, *Esq.*,

To R. J. SULLIVAN, *Esq.*,

DEAR SIR,—Near the village of Parnallee in this talook two meteoric stones have fallen. I have been on to the ground, and seen the places where they fell and the exact impression made in the earth where they lay. As no rain has fallen since, I was able to see that there was no mistake about it. The noise made as they came through the air made a deep impression on the minds of the people in that region, and was heard, I find from reports, from along the sea shore up to Teruchooly. They fell about three miles apart from each other. The smaller one weighs about 37 pounds, and sunk in the earth, where it fell, two feet and eight inches. The

larger one is from three to four times as large, and sunk in the earth two feet and four inches. It struck the earth flatwise. The smaller one fell about perpendicularly. The larger fell (coming from the north a little to the west) making an angle with a perpendicular line, of about fifteen degrees. Persons were standing near each place where they fell. Many worshipped them. The villagers gave them up to me, on condition that I should inform you, and save them from trouble being made, or rather, which they feared some officials might make. I do not make this statement officially, but am ready, if you desire it, to make an official statement on the subject. In writing this, I have fulfilled my promise to the people there.

Yours affectionately,
(Signed) H. S. TAYLOR.

Mandahasolie, March 28th, 1857.

From H. A. MURRAY, *Esq.*,
To R. J. SULLIVAN, *Esq.*,

MY DEAR SULLIVAN,—I write to acknowledge the receipt of your letter of the 28th ultimo, with enclosure from the Rev. Mr. Taylor (herewith returned), and to thank you for the information which you afford.

Lord Harris desires me to say that he thinks one of the meteoric stones, the larger one, should certainly be sent to the Museum here, and that Mr. Taylor might keep the other one for himself, as he might perhaps like to do so; and to request at the same time also, that you would ask Mr. Taylor to be good enough to furnish you with a statement of all the particulars and circumstances connected with the occurrence, the state of the atmosphere at the time, &c.

(Signed) H. A. MURRAY.

Guendy, 1st April, 1857.

From H. S. TAYLOR, *Esq.*,
To R. J. SULLIVAN, *Esq.*, *Collector of Madura*,

DEAR SIR,—Your note of 9th of April reached me at Rumnad on the 22nd, also the note of Mr. Murray to yourself, which I here-

with return. I agree with Lord Harris that "one of the meteoric stones" should be sent to the Museum at Madras, and I consent that it should be the largest, as they fell within this Presidency. I also thank His Lordship for kindly suggesting to you that "Mr. Taylor might keep the other one for himself as he might perhaps like to do so." Simply for myself I do not desire it, but while I honor the English, and am glad to have one at Madras for that reason, I love also my own country, which is but a branch of the English stock, and wish to send the other there. You are at liberty, however, to keep it at Madura till after the Exhibition in June.

In respect to Mr. Murray's request through you, I would state that I gave a somewhat minute account of their fall, &c. to Dr. Colebrook, with liberty to publish, should he think best, in the *Athenæum*. If he has done so, this may not be needed; I will, however, give a few particulars.

1. They fell on the 28th of February, Saturday, at about noon, a little south east of the village of Parnallee, Latitude north, according to the Government Map 9° 14′ Longitude 78° 21′ east.

2. The largest one fell a few seconds before the smaller one, and from two to three miles north of it. As was manifest from the hole it made in the ground when it fell, it came from a direction some ten degrees west of north, making an angle of about 15 or 20 degrees with a line perpendicular to the earth's surface. It struck the earth (or at least lay in the bottom of the hole made by it) flatwise, on the side that is most convex. The most round or convex side of the smaller stone also was downward, this being the position they would naturally assume as they passed with great velocity through the resisting atmosphere, an idea which did not occur to me till now. I had before simply noted the fact. The larger stone sunk into the earth when it fell, two feet and five inches, in a perpendicular direction. The smaller one two feet and eight inches. The smaller one fell also about perpendicularly. The smaller does not appear in any respect like a fragment of the larger one. The specific gravity of the smaller one, when it fell was about 3·3, water being the standard of unity. I observed that the specific gravity was increased after exposure to a shower, or that of the smaller

one was. I did not try that of the larger. The crack on the convex side of the larger one I did not perceive at all till it had been wet, and then at first it was just perceptible. Afterwards it gradually opened, I suppose, owing to the oxidation of the native iron it contains, perhaps, however, to other causes. The stones had not been wet till they came into my hands April 21st. They, each of them, fell in cultivated fields, one of which had been harvested. The crop in the other was still standing.

3. The *noise* seems to have been terrific to the Natives, causing those near to crouch from fear. It came like two claps of thunder, as they fell one after the other, continuing for some time, but gradually growing less loud. As they fell through the whole depth of our atmosphere, this would naturally be the case. The noise appears to have been heard at *Tuticorin*, forty miles distant. At this place, sixteen miles north, it excited considerable interest among those abroad at the time. The noise must have been great, occasioned by their great velocity. Taking their specific gravity into the account, say 3-3, their size being about that of large cannon balls, some allowance also being made for their irregular shape, from the depth they penetrated the soil, which was of common hardness, those who have observed the power of projectiles in such cases, will be able to calculate approximately what that velocity was.

4. Of the excitement among the natives, I suppose, I need not speak. I visited the place, because of the rumours that were flying abroad, making it evident to my mind that something peculiar had there transpired. First, I saw the holes from which, in the cultivated fields they had been freshly taken, no rain having subsequently fallen, and saw at the bottom the *hardly compressed* and exact impression left by them as they were taken up, and then as I saw the stones, I knew instantly that they were the identical ones which had been taken from those places. As I was more or less known in that region, and there is no gentleman whatever anywhere near, the rural people, utterly ignorant of the cause, came in great numbers to state the facts, and ask some explanation. Some of them supposed they were gods that had fallen; some that they had been shot from cannon in ships at Tuticorin; and some, that a Brahman

had brought them from the sea by his muntrunes: some rejected all these theories; but no one could tell or feel satisfied as to how these things could be. By simply striking my staff through the air, I could explain to them the noise; and by tying a stone to a string, and swinging it I could make them understand the centrifugal and centripetal forces, and how that from some disturbance in these forces, stones moving about some centre, like the moon about the earth, might fall. The explanations gave them relief. They put confidence in me, and gave me the stones at my request, that I might save them from the trouble of any official investigation, and put them into some Museum, or Scientific Institution.

P. S.—I forgot to say that there was nothing peculiar in the state of the atmosphere. It was a clear day. When the stone is sent on to Madras, if any scientific gentleman makes an analysis of it for the Museum, please be so good as to ask a copy of it for me.

Yours very truly,
(Signed) H. S. TAYLOR.

Manduhasolie, April 25th, 1857.

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8. From Mr. E. Lushington, Officiating Assistant Secretary to the Government of Bengal, inclosing copy of a despatch, dated 3rd June last, from the Hon'ble Court of Directors, and enclosure on the subject of the Geological Map of India prepared by the late Mr. Greenough:—

From R. B. CHAPMAN, *Esq.*,
Offg. Under-Secy. to the Govt. of India,

To A. R. YOUNG, *Esq.*,
Secy. to the Govt. of Bengal.
Dated the 27th July, 1857, *Home Department.*

SIR,—With reference to the special Narrative of the Government of Bengal, No. 25, dated the 25th August, 1856, respecting Mr. Greenough's Geological Map of India, I am directed to transmit for the information of the Hon'ble the Lieut.-Governor, and for communication to the Asiatic Society, the

Home Dept.

accompanying copy of a despatch, No. 76 of 1857, dated the 3rd June, from the Hon'ble the Court of Directors and enclosure.

A copy of the despatch has this day been communicated to the Superintendent of the Geological Survey for information, and for such remarks as he may be disposed to offer thereon.

I have, &c.,

(Signed) R. B. CHAPMAN,

Offg. Under-Secy. to the Govt. of India.

Public Department.

Our Governor-General of India in Council.

Letter dated 4th Sept. (No. 117) 1856, forwarding Bengal special narrative relating to the Geol. Map of India, prepared by the late Mr. Greenough, and sent out by the Court for examination, and remarks by the officers of Government in India.

Para. 1.—We observe that all the Officers, to whom the Map was communicated, expressed a high sense of its value, as a record of existing information as to the Geology of India. But it appears to be considered by a Committee of the Asiatic Society of Bengal, that from various circumstances the map should remain unaltered, as a memorial of the state of our Geological knowledge at the time of its publication, and that any Geological Map of India, intended to shew the results of more recent and more extended investigations, should be commenced *de novo*, when sufficient data shall have been obtained from the researches now in progress.

2. We transmitted the correspondence on the subject to the Council of the Geological Society of London, with a request that we might be furnished with the opinion of the Council on the best mode of proceeding, with a view to the framing of an accurate Geological Map of India.

3. We now forward to you in the packet a copy of the letter in which the views of the Council are stated, from which you will observe that the Council concurs generally in the conclusions of the Committee of the Asiatic Society of Bengal.

4. The various suggestions of the Council seem worthy of adoption, and we do not doubt that, in communication with Mr. Oldham,

you will be able to frame a scheme, by which the object in view will, in proportion as a correct knowledge of the Geology of India is obtained, be effectively carried out.

We are, &c.,

(Signed) Ross D. Mangles,
" " F. Currie,
And other Directors,

London, 3rd June, 1857. *Dover, 7th March.*

To Sir J. C. Melvill, K. C. B.,

Secretary to the Hon'ble East India Company.

Sir,—The Council of the Geological Society having carefully examined the documents submitted for their consideration by the Court of Directors of the East India Company, in reference to the Geological Map of India, compiled by the late Mr. Greenough, have requested me to convey to the Court of Directors their opinion on the subject as requested by your letter of the 5th January.

It appears from the reports of the Indian authorities to whom the Map has been forwarded, that in respect to topography it is extremely defective, and on that ground alone the Council would consider it an unfit basis for accurate Geological investigations, such as those now carrying on under the sanction of the East India Company.

It is surmised in one of the reports that the inferiority of the Map in this point of view may be partly ascribed to the long period of labour (20 years) bestowed upon it, the topographical Map having perhaps been selected at the remoter epoch of this long period of time, but knowing the extraordinary zeal with which Mr. Greenough pursued Geographical enquiry, sparing neither time, labour, nor expense, the Council cannot imagine that he neglected any means within his reach to give perfection to his Map, and are therefore more disposed to the conclusion that the materials for a good Map of India are more abundant and accessible in India than in England. The fact, however, is the same, and the Council cannot therefore recommend any further extension of the Map by

the issue of a new edition, thinking it best that the existing and unappropriated copies of the Map should be so distributed in India as to facilitate the comparison of its results with those of recent observation, the Map containing therefore a record only of the information accumulated by Mr. Greenough.

The necessity of adopting this course is further confirmed by the very strong opinions expressed by the Director of the India Geological Survey and by the Curator of the Museum of Economic Geology in India, of the many inaccuracies in the Geological information of the Map, inaccuracies not confined to errors in determining the limiting boundary between two contiguous formations, but involving the most serious mistakes as to the true nature and position of the formations themselves. These mistakes it was scarcely possible that Mr. Greenough as the compiler of the information, obtained by others, of whose ability and accuracy he could not always be a competent judge, should entirely avoid; but it would be very unwise to hamper the able Geological Surveyors of India by requiring them to adjust their information to so imperfect a Map. The opinion of the Council is therefore that the first step should be, to lay down from all the information possessed in India, an approximatively correct topographical Map, which it is believed could be effectively done by the East India Survey Department, and that on this Map should be recorded all the information of a Geological character in possession of the Directors, whether in India or at home, the act of recording being, however, confided to the Geological Department in India, as best able to estimate the fidelity and value of the information not actually resulting from their own enquiries.

The Council would also suggest that copies of this improved Map should, as soon as possible, be forwarded to the learned Societies, especially Geological, at home, in order that the attention of scientific men should be at the first moment directed to it, as one of the best means of insuring its ultimate perfection.

I have, &c.,

(Signed) J. G. Portlock, *President.*

The Librarian submitted his usual monthly report for the months of July and August last.

LIBRARY.

The Library received the following accessions during September last.

Presented.

Annalen der Chemie und Pharmacie for May, 1857.—BY THE EDITOR.

Journal Asiatique, No. 35.—BY THE ASIATIC SOCIETY OF PARIS.

Journal of the Statistical Society of London, Vol. XX. Part II. June, 1857.—BY THE SOCIETY.

——— (Quarterly) of the Geological Society, No. 50, Vol. XIII. Part. 2, May, 1857.—BY THE SOCIETY.

Weber's (Dr. A.) Indische Studien, Band IV. Heft 1.—BY THE AUTHOR.

Introduction a L'Etude de la Langue Japonaise, par L. Léon De Rosny. —BY M. CHEZ BENJAMIN DUPRAT.

Journal of the Academy of Natural Sciences of Philadelphia, New Series, Vol. III. Part I. *Philadelphia*, Royal 4to.—BY THE ACADEMY.

Geological Papers on Western India, including Cutch, Sinde, and the South-east Coast of Arabia; to which is appended a Summary of the Geology of India generally edited for the Government by H. J. Carter, Royal 8vo.; with an Atlas of Maps and Plates, folio.—BY THE GOVT. OF BOMBAY.

Smithsonian Contributions to Knowledge, Vols. VI. and VII. Royal 4to. *Washington.*—BY THE SMITHSONIAN INSTITUTION.

——— Reports 8th and 9th (Annual) and the Proceedings of the Board of Regents of the Institution, up to Feby. 4th, 1855.—BY THE SAME.

Proceedings of the Academy of Natural Sciences of Philadelphia. Vol. VII. Nos. 2 to 7 (sheets).—BY THE ACADEMY.

——— of the New Orleans Academy of Sciences, Vol. I. No. I.— BY THE ACADEMY.

Constitution and By-laws of the ditto.—BY THE SAME

Madras Journal of Literature and Science, April to June, 1857, Vol. II. and No. 3.—BY THE EDITOR.

Selections from the Records of the Government of Bengal. No. XXVI. Reports on the Suppression of Dacoity in Bengal for 1855-56, 2 copies.— BY THE BENGAL GOVT.

Vikramorvas'í of Kálidása translated into Bengali by Kaliprasana Sing, *pamphlet*, Calcutta, 1857.—BY THE TRANSLATOR.

Bistvádisták, by Bharut Chunder Seeromonee, *pamphlet*, Calcutta, 1268.—BY BABU GOUR DA'S BYSACK.

The Vividhártha Sañgraha, No. 40.—BY BABU RAJENDRALA'L MITTRA.

The Oriental Christian Spectator for August, 1857 —BY THE EDITOR.

The Oriental Baptist for September, 1857.—By the Editor.

The Calcutta Christian Observer for ditto.—By the Editors.

Exchanged.

The Athenæum, for June, 1857.

The London, Edinburgh and Dublin Philosophical Magazine, Nos. 89 and 90, for July, 1857.

Purchased.

Annales des Sciences Naturelles, Tome 6, Nos. 3 and 4.

The Annals and Magazine of Natural History, No. 115, for July, 1857.

Comptes Rendus, Nos. 22 and 23.

Tables des Comptes Rendus des Sciences de l'Academie des Sciences, Tome quarante-Troisiem, July to December, 1856, Tome XLIII.

Literary Gazette, Nos. 2109 to 2112.

The Natural History Review, No. 3, for July, 1857.

Revue des Deux Mondes, 15th June and 1st July, 1857.

Revue et Magasin de Zoologie, No. 5, 1857.

Edinburgh Review, No. 215, for July, 1857.

Westminster Review, No. XXIII. July, 1857.

Weber's (Dr. A.) Indische Studien 4th, Band X. Heft 1.

Traces de Buddhisme en Norvége avant l'introduction du Christianisme, par M. C. A. Holmboe, 1857, pamphlet.

E'tudes sur la Grammaire Védique. Práticâkhya du Rig-Véda par M. A. D. Regnier, 8vo. *Paris*, 1857.

Goue Da's Bysa'ck.
Librarian and Asst. Secy.

1*st October*, 1857.

For October, 1857.

The Monthly General Meeting for October was held on the 7th Instant.

The Hon'ble Sir James Colvile, *Knight*, *President*, in the Chair.

The proceedings of the last Meeting were read and confirmed.

Presentations were received—

1. From C. G. F. Lloyd, Esq., New Norfolk, Tasmania, a box containing animals and birds as described in Mr. Blyth's report.

2. From the Smithsonian Institution, Washington, the latest publications of the Institution.

3. From the Government of Bombay, 2 copies of the Geological papers on Western India, &c., with Atlas.

4. From Babu Kali Prasana Sing, a copy of his translation of Kalidass's Vikramarvasi, a pamphlet.

The election of Mr. Robert Schlagintweit as a corresponding member of the Society was postponed under rule 6 of the Society's byelaws.

The following gentlemen have signified their wish to withdraw from the Society. Their notes were recorded.

Lieut. H. T. Forbes,

Dr. F. J. Mouat.

The Council announced that they had elected, as members of their body, subject to the confirmation of the Society, Captain C. H. Dickens, and Mr. Cowell in the place of Dr. Spilsbury deceased and Archdeacon Pratt resigned.

Communications received.

1. From Mr. H. Piddington a description of the "Balsa" or raft of the Phillipine Island, with directions for making it.

2. From Lieut.-Colonel Waugh, Surveyor General of India, through Major Thuillier, the following papers on the identity of Mount Everest with Deodangha.

Surveyor General's Field Office,

Deyra Dhoon, 5th August, 1857.

My dear Thuillier,—In my letter No. 29 of 1st March, 1856, communicating the results of our calculations for the position and height of No. XV in my list of Himalayan peaks, I stated my reasons for deciding to call this peak "Mount Everest."

At the August meeting, last year, of the Asiatic Society of Bengal, you were good enough to communicate the results regarding "Mount Everest" in an interesting address delivered by yourself. The facts having been thus promulgated, Mr. Hodgson endeavoured in the Journal of the Asiatic Society to establish the identity of Mount Everest with Deodangha, &c. The arguments adduced for this purpose were so palpably conjectural, resting on hearsay evidence alone, that I thought it needless to refute them, as their fallacious character must be apparent to any person competent to understand

the subject. The true Geographical Latitude and Longitude of Deodangha are unknown to Mr. Hodgson, or even its true bearing and distance from any locality which can be recognised as a fixed point of departure. Its height also is unknown. All these data are elements necessary to the identification of that mountain. The physiognomical contour of a mountain is a very uncertain test, because it changes with every mutation of aspect; but even this test is wanting in Mr. Hodgson's case, as he has never seen Deodangha.

In April last, my attention was drawn to another communication made by Mr. Hodgson to the Asiatic Society, from which it appears that he has taken steps to put the subject, in what appears to me, a very unfair light, before the Royal Asiatic Society, as well as to have his conclusions on a point of great ambiguity, promulgated as certainties in Journals of extensive circulation. Under these circumstances, I considered that it would be satisfactory to scientific men, that the grounds on which the supposed indentity of Deodangha was made to rest, should be examined and discussed. In my judgment the only proper way of doing this, was to lay the whole of the documentary materials before a Geographical Committee composed of Geometricians of experience and capacity, competent to deal with such investigations. With this view I issued departmental orders annexed.

Of the five officers to whom this duty was assigned, four have now delivered their reports. The fifth Lieut. Montgomerie of Engineers is at present difficult to communicate with, being absent in Thibet, conducting the G. T. Survey operations beyond Kashmir. That officer's opinions will be very valuable, and D. V. shall be transmitted hereafter. In the meantime, encompassed as we are by the confusion and embarrassments attending a military rebellion of unprecedented magnitude, I am unwilling to delay the transmission of the four reports hereto annexed. These are so ably argued, and place the subject in so luminous a point of view, that it is unnecessary for me to add more than a few words in this place.

Mr. Hodgson labours under a strong conviction, that Mount Everest is identical with Deodangha; and the enthusiasm and ingenuity with which he advocates his view of the question seem to have carried the same conviction to the minds of others not conver-

sant with the facts. It is easy to see how, this fallacy originated in his mind. The sketch map published by him in the Journal of the Asiatic Society, December 1848, gives his idea of the configuration of that part of the Himalayas. A more erroneous impression of the formation of the country was never formed. He represents a solitary mountain occupying a vast tract. If this unity really existed, the identity of Mount Everest and Deodangha would indeed be indisputable, as it would rest on the fact of there being only one mountain within a given space. This single mountain, however, is entirely imaginary. The range presents the appearance of a sierra with innumerable peaks and groups of peaks. Among these, nine have been fixed by the G. T. Survey of India, and are marked XII to XXI in the chart accompanying Mr. Scott's report. Besides these nine, several others are more or less partially visible, which we were unable to identify, and those who have any experience in conducting Geodetical operations in the Himalaya, can harbour no doubt that many other peaks do exist, which have been concealed from our view by intermediate ranges. It is well known to Surveyors, that among a number of peaks having various altitudes and distances, the highest point in appearance is not always the highest in reality; the occular deception being caused by the increment in the earth's curvature and decrement in the subtended angle caused by distance.

The erroneous idea Mr. Hodgson has formed of the configuration of this mountain range is sufficiently proved by his sketch map already referred to. If further proof was necessary it may be derived from the statement Mr. Hodgson has given of the opinion he communicated to me when I returned from the expedition I made into Sikim in 1847. Having mentioned to him, that I had seen from the confines of that province an enormous snow mass lying in a north-westerly direction from Tonglo, he immediately pronounced it to be "Deodangha." Now the mountain I then saw was not Mount Everest, but No. XIII which Major Sherwill has so well described in the Asiatic Journal. Thus Mr. H. has attributed the same name to No. XIII and to No. XV without any exact knowledge of the height or position of either. He has fallen into this mistake from adopting the erroneous conception that there is only a single mountain in all this wide space.

Mr. Hodgson proves no more than that there is according to native report, a mountain called Deodangha somewhere between our Nos. XI and XXI (vide chart.) That mountain may be one of the peaks fixed by us, or it may be one that we failed to fix, or it may not have been visible to us at all.

If Deodangha is to be taken as the highest peak, that allegation only rests on the hearsay evidence of natives unable to determine the actual height of a mountain, and if it be a true guess on their part, it by no means establishes the identity of Deodangha, because we do not know for certain that Mount Everest is the highest culminating point. All we do know is, that it is the highest point we have measured.

The only satisfactory way, in which the position of Deodangha can be determined, is by carrying a series of triangles towards it, until it can be seen and identified. Operations of this kind are impracticable at present for political reasons. In the meantime the position and height of Deodangha constitute a Geographical problem remaining to be solved. If it is not identical with Mount Everest, a very grave blunder would be committed by assigning its name to another peak. If it is identical, no harm will have been done by the adoption of another cognomen, pending the doubt now existing.

Great stress has been laid in some quarters on the fact, that the position of Deodangha is given in German maps. Now this proves no more than that some German Geographers are rash enough to lay down any thing upon hearsay, for we know beyond all question, that no competent European, with adequate means, has ever been in the vicinity of Deodangha, so as to be able to fix it. Deodangha does not appear in English maps, because it would be inconsistent with the rigorous notions which prevail among English scientific men in general, to pretend to give the position of a point on the earth's surface on hearsay evidence. It would violate every principle of accuracy and precision laid down by my predecessor for the conduct of the Trigonometrical Survey of India to jump at conclusions, in this reckless manner.

As the principle of adopting an European name has been much commented upon, I will here add without further remark, paras. 6 and 7 of my letter to your address, cited at the commencement of his letter.

"I was taught by my respected chief and predecessor Colonel G. Everest, to assign to every Geographical object its true local or native appellation, and I have always scrupulously adhered to this rule, as I have, in fact, to all other principles laid down by that eminent Geodist.

"But here is a mountain, most probably the highest in the world, without any local name that we can discover, whose native appellation, if it has any, will not very likely be ascertained until we are allowed to penetrate into Nepal."

In conclusion, as the Asiatic Society has inserted in its Journal papers tending to mislead in regard to the identity of Deodangha and Mount Everest, I trust that they will give prominence to this discussion, which proves that the identity is not only doubtful, but far from probable, if the particulars supplied by Mr. Hodgson are correct so far as they go. Considering it a matter of importance, that Geographers should be enabled to form their own opinion on the subject, I request you will communicate this correspondence with its annexures to the Asiatic Society retaining a copy for record.

I remain, &c.

(Signed) A. S. WAUGH.

P. S.—You will perceive the gist of the question is not whether the mountain should be called Mount Everest, or by its true native name (which is a principle not disputed by any one), but whether it can be called Deodangha without risk of error, in the absence of satisfactory proof that this is really its native name.

Department Order.

Surveyor General's Field Office,

Dhera Dhoon, 22d April, 1857.

The attention of the Surveyor General of India having been drawn to the proceedings of the Asiatic Society, as marginally cited, it appears to him desirable that the question, which has been raised as respects the identity of Mount Everest "with Deodangha," should be examined by

From Mr. Hodgson submitting for the information of the Society, and the public in general, the following extract of a letter from the Secretary to the Royal Asiatic Society in reference to the mountain Deodangha ("Mount Everest" of Waugh.)

Your letter of the 27th October, together with your observation on the

incongruity of assigning a European name to Indian localities, already provided with native appellations, was received and read at our last meeting of the 17th inst., and I have the pleasure to inform you, that the members present unanimously expressed their concurrence with your view of the case.

A notice of the paper was communicated to the *Athenæum* and *Literary Gazette*, and has appeared already in full in the latter journal.

I have, &c.,
(Signed) E. Norris,
Secy. R. A. Society.

To B. H. Hodgson, *Esq.*

a competent Geographical Committee, in order to set that point at rest.

2. The Surveyor General has carefully examined all that Mr. B. H. Hodgson has advanced in support of the identity of Mount Everest with Deodangha, and has formed his own opinion on the subject; but he thinks it will be desirable that the question should also be formally investigated by a Committee, and the opinion thereof placed on record for general satisfaction.

3. The Committee will be composed as follows:—

Lieutenant Tennant, Eng., 1st Assistant G. T. S., in charge of Jogi Tila Series.

W. Scott, Esq., Chief Draftsman in the Field Surveyor General's Office.

J. W. Armstrong, Esq., Civil Assistant G. T. Survey.

Lieutenant Montgomerie, Eng., 1st Assistant G. T. Survey, in charge of Kashmir Series.

J. Hennessy, Esq., 2d Assistant in charge of Geodetic Computations at Trigl. Survey Head Quarters.

4. The papers connected with Mount Everest, and Mr. Hodgson's alleged identification thereof with Deodangha, are at present under charge of Mr. W. Scott who has spent a quarter of a century in unravelling more intricate geographical problems than this. Mr. Scott will form his own independent opinion, and submit the same to the Surveyor General, after which he will forward the papers to Mr. Hennessy.

5. Mr. Hennessy has been engaged on all the computations for determining the positions and heights of the principal peaks of the Himalaya Range, including Mount Everest, and is well acquainted with investigations of this kind. He also saw Mount Everest when he was engaged in the North East Longitudinal Series. After submitting his independent opinion to the Surveyor General, he will forward the papers to Mr. J. W. Armstrong.

6. Mr. Armstrong is one of the gentlemen by whom Mount Everest was observed. He will forward his opinion to the Surveyor General, and the papers to Lieutenant Tennant, by whom they will be independently reviewed; thus giving the investigation the benefit of his eminent abilities in matters of difficult research.

7. From Lieutenant Tennant, the papers will proceed to Lieutenant Montgomerie in Kashmir, whose recent experience in details of Himalayan Geography will enable him to pronounce this question, a valuable independent opinion, which he will transmit with all the papers to the Surveyor General.

(Signed) A. S. WAUGH,
Surveyor General of India.

Memo. by Mr. W. H. Scott, Draftsman in the Field Surveyor General's Office.

With reference to Department Orders No. 10267, dated 22nd April, 1857, in which I am called upon to state my independent opinion on the identity of Mount Everest with Deodangha or Bhairavathan, I beg leave to report for the information of the Surveyor General of India as follows:—

After a very careful examination of the papers specified in the margin, I am humbly of opinion that there is no evidence to establish satisfactorily the identity of Mount Everest with Deodangha or Bhairavathan.

1st. Mr. Hodgson's letter on the Native Name of Mount Everest, J. A. S. No. 5, 1856.
The papers referred to in that communication and published in J. A. S. No. 6, 1856 are,—
1st. Routes of two Nepaulese Embassies to Pekin, with remarks on the Watershed and Plateau of Tibet.
2nd. Systematic summary of the route from Katmandu to Pekin, Kaji Dalbhanjan Pande, 1822-23.
3rd. Abstract of Diary from Katmandu to Pekin by Chountra Pushkersah, 1817.
4th. Memo. on the Seven Cosis with Sketch Map, J. A. S. December 1848.

The routes of the two Nepaulese Embassies from Katmandu to Pekin no doubt contain much interesting details, but unfortunately they do not assist us in the present investigation, because, the Azimuths or Bearings, it will be seen, are not given, and consequently we can bring them to no account. It is essentially necessary that the position of Kutighat or Bhairava Langur should be known with some degree of certainty, but this we are unable to do

by the aid of the papers in question, as will be apparent to all familiar with the subject. All the maps I have consulted only tend, in my humble opinion, to confuse and mislead; for instance, the direct distance of Kuti from Katmandu, according to Kirkpatrick's Map, is only 48 miles N. 88° E.; Walker's engraved Map gives 63.6 miles N. 60° E.; Parbury and Allen's 60 miles N. 55° E.; according to Crawford, 75 miles N. 75° E.; Arrowsmith's Map 56.6 miles N. 78° E.; according to the Preliminary Sketch Map compiled at the Surveyor General's Office, Calcutta, 72.6 miles N. 53° E.; according to the route of Kaji Dalbhanjan Pande, the distance is 101.5 miles. The Chountra omits Kuti altogether.

Amidst these conflicting values it is of course impossible to arrive at any satisfactory conclusion. The following extract from a letter from Major Ramsay, Resident at Nepal, to Major Thuillier, regarding the compilation Map of that country, dated 11th June, 1855, will serve to convey an idea of the conjectural materials and discordant elements we have to deal with. "You are doubtless aware that no European has ever travelled in the interior of this country, and that all the information we possess of it, is derived from the reports of persons who are totally devoid of scientific knowledge, and accustomed in their comparisons of distances to trust to vague estimates formed by parties who have travelled through the different districts."

With respect to the sketch map it will be seen, that Mr. Hodgson gives only one isolated peak segregated from all the rest; whereas nothing can be more contrary to the fact as regards the Himalayas. Besides the configuration of the ground must be very different to that represented by Mr. Hodgson, being in fact difficult in the extreme. There is, however, no evidence to shew that Mount Everest and Deodangha are identical. Mr. Hodgson says, "The Bhootia Cosi has its source at Deodangha, a vast Himalayan peak situated some sixty or seventy miles east of Gosainthan, and *a little north and east of the Kuti Pass, being probably the nameless Peak*,* which Colonel Waugh conjectures may rival Kanchanjinga in height. The river flows from the base of Deodangha past the town of Kuti, and

* The words underlined by me are omitted in Mr. Hodgson's communication on the native name of Mount Everest. J. A. S. No. V. 1856.

has a S. W. direction from Kuti to Dallalghat." Vide Memo. on the seven Cosis.

Now, on comparing Mr. Hodgson's sketch with the accompanying chart which exhibits all our peaks laid down between Katmandu and Darjiling, it will be seen that it is not likely the Bhootia Cosi could have its sources at our Mount Everest, because it appears to me, as far as I can judge, that the Dud Cosi, which rises "amid the perpetual snows," and also the Arun Cosi, would be to the left and right of Mount Everest respectively, so that it does not seem clear how the Bhootia Cosi, can originate from our Mount Everest.

Again Mr. Hodgson says, "This great mass is visible alike from the confines of Nepal Proper, (the valley,) and from those of Sikkim, and all the more unmistakeably, because it has no competitor for notice in the whole intervening space. It is precisely half way between Gosainthan which overlooks Nepal Proper, and Kanchang which overlooks Sikkim." Now a slight computation will serve to shew that Mount Everest is invisible from the valley, being depressed nearly one minute and thirty seconds below XVIII. The most conspicuous mass visible from Katmandu or the valley would be our Peaks XIX. and XX. Nor is Mount Everest visible from the confines of Sikkim, as Major Sherwill did not see it anywhere on his route from Singelelah to Kanglanamo, the height of the latter place, Major Sherwill estimates to be 13,000 feet. He says, "One Mountain in the Nepal range is a most remarkable object, both for its curious shape and for its immense height, its name none of my party knew, nor have I yet succeeded in obtaining the name. The Peak is a hollow crater-like mountain, probably 27,000 feet in height with a long table mountain attached to it, both covered with glaciers. To the west of this great mountain are five distinct Peaks separating the large mountain from a hollow shell-like and perpendicular mountain about 26,000 feet in height." (Notes upon a tour in the Sikkim Himalaya mountains. J. A. S., No. VIII. 1853.) The mountain here alluded to is our XIII., the height of which is 27,779 feet, Mount Everest being depressed nearly 14 minutes below XIII.

From the foregoing I am led to infer, that Mr. Hodgson has

probably mistaken one peak for another, more especially since the country is said to be very polyglottic; in fact, Mr. Hodgson himself throws some doubt on the identity of Mount Everest with Deodangha, or Bhairavathan, or Bhairava Langur, or Gnalham thangla, as his own expression "being *probably* the nameless peak which Colonel Waugh conjectures may rival Kanchanjinga in height," evidently shews. The following extract from an interresting account of the ascent of the mountain Sumeru Purbat by Captain Robertson, given in the Report of the British Association for the advancement of science for 1855, will serve to shew how liable we are to fall into mistakes in identifying a group of peaks even when in their immediate neighbourhood. "On the right of the Glacier rose the three Great Jumnotri Peaks, designated in sheet 65 of the Trigonometrical Survey of India, Black E., Great E., and Little E., the altitudes of which, as given in the map, are 21,155, 20,916, and 20,122 feet. The peaks designated in the Trigonometrical Survey, Great E. and Little E. are the two summits of a mountain which the natives call Bunderpanch. On the left the Glacier was bounded by a wall of precipices terminating in the lofty snow-covered Peak of Sumeru Purbat. The height of this peak is not given in the Survey Map, but from its appearance, as compared with that of the measured peaks, and also from the height it rises above the limits of perpetual snow, I should estimate its altitude at about 18,000 feet. The altitude of Bunderpanch-ke-ghattee, I estimate at about 16,000 feet.

"In making my agreement with the Brahmin, I was under the impression that Sumeru Purbat was one of the measured peaks, and it was not until I reached Bunderpanch-ke-ghatta that I discovered my mistake."

(Signed) W. H. Scott,
Draftsman, S. G. Field Office.

Memorandum by J. Hennessy, Esq., 2nd Assistant in charge of the Geodetic computation at Trigonometrical Survey Head Quarters.

I have carefully perused Mr. B. H. Hodgson's paper, attempting to identify Mount Everest with some hill variously called "Devadangha, vel Bhairavathan, vel Bhairava-langur, vel Gnalham thangla."

I am of opinion that Mr. Hodgson has advanced no evidence whatever to prove this identity.

The arguments stated, if indicating any one peak more than another, point to Peak XVIII., as the one called Devadhangha, &c.

Thus Mr. Hodgson speaking of Devadhangha says—

It is a "great mass."

It is visible "from the confines of Nepal (proper.")

Now the straight line passing through Mount Everest and XVIII., and extended towards Nepal Proper passes nearly through the centre of that valley, nor is there any point in the latter at which the angle Mount Everest and XVIII. exceeds 3°——. Taking any point on the straight line Mount Everest, XVIII., and valley, and within the valley, the latter peak shuts out the former, as can be demonstrated by calculation. It is also exceedingly improbable that the same does not occur from *any* point whatever in the valley. But be this as it may, it is impossible, under the circumstances, that XVIII. would admit of a "great mass" of Mount Everest being seen.

"And yet that Devadangha, &c., *is seen* from the 'confines' of the valley, and that it *is a 'great mass,'* we have Mr. Hodgson's evidence to shew. That gentleman has therefore demonstrated, at least, that Mount Everest and Devadangha are not identical.

"I have seen Mount Everest, certainly from near Titalia in Purneah, very probably from other districts along the Terai. It never struck me as a great mass.

"(Signed) J. B. N. Hennessy,
"*2nd Asst. G. T. Survey of India.*"

Memo. by J. W. Armstrong, Esq.,
Civil Asst. G. T. Survey of India.

In compliance with Department Orders No. 10267 by the Surveyor General of India, under date the 22nd April, 1857, I beg leave to submit the following remarks on the question which has been mooted regarding the identity of Mount Everest with Deodangha vel Bhairavathan.

This lofty pinnacle of the Himalayas was observed by me in 1846, from a distance of above 200 miles, and by Col. Waugh and Messrs.

Lane and Nicholson from different stations of the North East Longitudinal Series, and characterized by each according to the nomenclature which each had adopted. When the observations were all collected, and the snow points discussed and arranged in order from east to west, this lofty peak was characterized by the numeral XV. There were no means of ascertaining either the name of this mountain, or the names of the others which were observed; and when its stupendous height was finally determined, a name was sought for to stamp its greatness, and none presented itself, in the absence of its own local appellation, more fitting than that of our renowned ex-Surveyor General.

This nomination has been impugned by Mr. Hodgson on the strength of certain data advanced by him in the Journal of the Asiatic Society of Bengal, data which cannot be received as conclusive, because they are purely conjectural.

"The first datum is a *conjectural bearing and distance from positions never visited.*

"The other data are the itineraries of two Nepaulese Embassies to Pekin, the distances of whose routes are equally conjectural. Mountainous as these routes must have been, and tortuous from the nature of the country, the distances noted as traversed must have been calculated not so much by linear measure, as by the difficulties encountered and the delays entailed.

"Independent of these objections, this lofty snow peak is neither visible from the valley of Nepaul on account of an intervening though lower snow mount, nor even from the confines of Sikkim, for a similar reason. And great as Mr. Hodgson's knowledge of the mountainous region of Nepaul may be, his authority on the question at issue can be received only with diffidence, because it is enunciated without personal observation, and based upon the vague information of untrained travellers.

"(Signed) J. W. Armstrong,
"*Civil Asst. G. T. Survey,*"

Memo. by Lieut. J. F. Tennant, Engrs., 1st Asst. G. T. Survey in charge of Jogi Tila Merl. Series.

During the identification of Col. Crawford's Peaks, and the dis-

cussion of the identity of Mount Everest with Deodangha, I have paid a good deal of attention to the question.

There are no means of knowing the position of Deodangha beyond what are given by Mr. Hodgson. These consist 1st of an Itinerary by the two Nepaulese Embassies to Pekin, and 2nd of a paper on the seven Kosis, 3rd, several assertions for which no evidence is produced in a letter to the Secretary of the Asiatic Society of Bengal.

As regards the first, or the itineraries, I believe no person who has had any surveying experience can doubt their being absolutely useless as evidence of any thing but the existence of a Pass called Bhairava Langur. Mr. Hodgson supplies the information that it is identical in name with the adjacent mountain, which is, I conclude, derived from information. It is absolutely necessary for using a Route Survey that both bearings and linear distances should be given. The former in these routes are totally deficient. The latter are given along the road, which in mountainous countries would only be useful, had nature so formed the passes that they should all lie in a straight line and be reached one from another by a nearly level straight line. The document in question bears evidence that this is not the case, for by the route distance (117 miles) Mount Everest is far within Bhairava Langur, and this assumes the identity of their directions. If the itinerary is competent to determine the position of Bhairava Langur, it is equally so to determine that of Pekin, and Mr. Hodgson would do Geometers a service by explaining the process.

In a note to page 478 of No. VI. of the Journal of the Asiatic Society of Bengal, Mr. Hodgson says that Bhairava Langur is visible from the confines of Nepaul Proper as a great mass. Now it is demonstrable that the summit of Mount Everest is not visible from Katmandu or any part of the valley of Nepaul as a conspicuous or recognizable prominence, if indeed it at all tops the intervening snowy range. Mr. Hodgson also asserts that it is visible from the frontiers of Sikkim. It certainly is not visible from Kanglanamo, 13,000 feet high, being shut out by the shoulder of our peak XIII., and it is evident that the same result will be true all along the Singalilah range as far as Tonglo. I know that Mr. Hodgson asserts that it has no competitor for notice, but sound Geometry

contradicts Mr. Hodgson, and I for one prefer the evidence it gives to any that may be derived from the fallible rendering of fallible informants.

Mr. Hodgson further undertakes to find the name of any object whose bearing and distance he has. It may be possible in some cases, and possibly Dwalaghiri is one. I can only say, having surveyed myself among hills, that nothing is more fallacious than names given from a distance, even when an object is conspicuously visible. I myself believe that there is an identity between the mountains to which Capt. Webb and the G. T. Surveyors have assigned the name of Dwalaghiri, but far be it from me to assert that that is its veritable name.

Mr. Hodgson is not probably less fallible than his predecessors, and yet Col. Crawford places Dhayabang east of the meridian of Katmandu, nearly in the position of our peak XXV., whereas another authority (Kirkpatrick) places it far west of that meridian; and here, it is quite evident, that the same name would not be assigned to the same peak. That Mr. Hodgson can get a name to any peak, I believe, but that it will be the true name, I do not believe as a general rule.

2nd. Mr. Hodgson gives a memo. on the seven Kosis with a sketch.

The sketch has no scale, and is confessedly a roughly drawn document, not founded on Survey. It can therefore hardly be admitted as evidence of any thing, but I shall show reason to doubt its being in Mr. Hodgson's favor.

Mr. Hodgson in the paper asserts, 1st.—That there is a mountain called Bhairava Langur or Deodangha.

2nd.—That that mountain is the source of the Bhootia Kosi.

3rd.—That it is the same as Mount Everest of Col. Waugh.

4th.—That Mount Everest is in the place of the source of the Bhootia Kosi.

I have said there is presumptive evidence of the first assertion.

The second assertion rests solely on information which is not very reliable (as far as the experience of accurate Surveyors goes) at the best, and is peculiarly liable to error in this case, as the Bhootia Kosi is only one of several confluent streams, and has

never been seen, as far as I learn, in its separate form by any European. Consequently its course must be liable to great error.

Mount Everest is stated to be identical with the source of the River as the occupant of the same position; but if this position be untrustworthy, there is an end of this, and consequently the proposition, that both being sources of the same river are the same, falls to the ground.

The real result from this paper is that,

1st.—There is a mountain called Deodangha, the source of a river

2nd.—That a stream called the Bhootia Kosi comes from a snowy mountain.

3rd.—That the coincidence of these two mountains is to say the best, subject to doubt, and

4th.—That there is no evidence to show the Latitude, Longitude and height of Deodangha and Mount Everest to be identical at all.

If the sketch map be a true representation of the course of the streams given, I believe Mr. Hodgson will be puzzled to find room for his other Kosis, giving each the feeding area necessary for its size.

If the mountain Deodangha be a little north and east of the Kuti pass, unless that has been grossly misplaced by all the Geographers who have exercised their talents on it, Deodangha *is not* Mount Everest.

I am aware that Mr. Hodgson says, he has explained the identity to the Society; but I see no evidence to satisfy a Geographer, and were any evidence wanting to show a pre-judgment of the case, we have his own letter, from which I quote as follows:—

"A few words more may be given to the last point, as being the matter which chiefly forced my attention as a Political Officer in Nepal, on the site of Mount Everest, and enabled me in after years, when I heard surmises (from, I think, Col. Waugh himself, or from some of his subordinates) of the great height of a peak in that direction to fix on Deodangha vel Bhairavathan (both names are used) as being the enormous snow mass in question, and I have often of late repeated this here very recently to Mr. Blanford." All which demonstrates that before Mount Everest was named, or its definite position fixed, Mr. Hodgson had committed himself by repeated assertions of the identity of the forthcoming highest peak

and Bhairavathan, an admission in itself sufficient to render all his evidence valueless.

Having got this fixed idea, Mr. Hodgson next collected data for Bhairavathan or Deodangha indefinite in themselves, and which might apply to any mountain peak within a considerable range, including Mount Everest of course. On only one of these or rather on a class of them, I think further comment necessary.

The position of Mount Everest is connected with that of Gosainthan as a known point; but I have shown that name is not an evidence of identity. Further, the position of Gosainthan given in the Physical Geography of the Himalayas is not that generally given even as regards Kathmandu. Thirdly, that the longitude of Kathmandu itself is uncertain to a small extent, and was so to a great amount, till the identification of Col. Crawford's peaks with ours, reduced the limit, all which tells on the position of Deodangha.

On the whole, we have no evidence that Mr. Hodgson ever saw Mount Everest, or that any one else ever recognised its pre-eminent height, for contrary to Mr. Hodgson's repeated assumptions, it is demonstrably not a very conspicuous mass from a distance. There is a wide difference between the manner in which the known names have been given and that in which it is proposed to force this on us. All the points to which names have been given are laid down by competent Surveyors under those names, in most cases by some of the men who have fixed the final position. Deodangha has never been so defined, and even on Mr. Hodgson's showing the names may be those of passes or mountain masses, or particular prominences.

Mount Everest is the assigned name of a protuberance of no very large extent, and it would be most unadvisable in my opinion to abandon this definite name, which will soon be familiar to every English or European child, for one of the—to Europeans,—unpronounceable names given by Mr. Hodgson, whose application is, to say the least, extremely doubtful, and whose misapplication would cause endless confusion.

(Signed) J. F. TENNANT, *Lieut., Engrs.*
1st Asst. G. T. Survey.

The Librarian and the Zoological Curator submitted their usual monthly reports.

LIBRARY.

The Library has received the following accessions during October last.

Presented.

Proceedings of the Royal Society, Vol. VIII. No. 26.—BY THE SOCIETY.

Ditto of the Royal Geographical Society of London, No. IX. for April and May, 1857.—BY THE SOCIETY.

Mantic uttaïr ov le langage des Oiseaux, Poëme de Philosophie Religieuse, Par Farid-Uddin Attar, Publié en Persan Par M. Garcin de Tassy, *Paris*, 1857.—BY THE AUTHOR.

The Quarterly Journal of the Geological Society, Vol. XIII. No. 51, Part 3, August, 1857.—BY THE SOCIETY.

Vendidad Sadé, Craduit en Langue Huzvaresch du Pehlewie. Texte Autographie d' apres les Manuscrits Zend Pehlewis de la Bibliotheque Impériale de Paris, *Paris*, 1 and 2 Livraison. *Sheets* 1855, 2 copies.—BY THE IMPERIAL LIBRARY.

Abú'l-Mahásin 'Ibn Tagri Bardii Annales, quibus titulus est

النجوم الزاهرة , في ملوك مصر والقاهرة

e Codd. MSS. nunc primum Arabice editi. Tomi IIi. Partem priorem, edidit T. G. J. Juynboll. Lugduni Batavorum, 1857. 1 Copy.—BY THE ACADEMY.

Zietschrift der deutschen Morgenländischen Gesselschaft, Band II. heft 3.—BY THE GERMAN ORIENTAL SOCIETY.

Vividhárta Sañgraha, No. 41.—BY BABU RA'JENDRALA'L MITTRA.

The Calcutta Christian Observer for Oct. 1857.—BY THE EDITORS.

The Oriental Baptist for Oct. 1857.—BY THE EDITOR.

The Oriental Christian Spectator for Sept. 1857.—BY THE EDITOR.

Proceedings of the Trevandrum Museum Society, 23rd Dec. to 21st Feby. 1856.—BY THE SOCIETY.

Report on the Observatories of His Highness the Maha Raja of Travancore, at Trevandrum, and on the Agustier Peak of the Western Ghats, by J. A. Broun, *pamphlet*, 1857.—BY THE MADRAS GOVT.

Recueil des Actes de l'Académie Impériale des Sciences, Belles lettres et Arts de Bordeaux, 2nd Trimestre, 1856.—BY THE ACADEMY.

Exchanged.

The Athenæum for July, 1857.

The London, Edinburgh and Dublin Philosophical Magazine, and Journal of Science, No. 91, August, 1857.

The Calcutta Review, No. 57, Sept. 1857.

Annalen der Chemie und Pharmacie, June, 1857.

Purchased.

Annales des Sciences Naturelles, Tome VI. No. 5.

Comptes Rendus, Nos. 24 to 26 and Nos. 1 to 4, July 1857.

Literary Gazette, Nos. 2113 to 2116, and a duplicate copy No. 2088.

The American Journal of Science and Arts, No. 70, July, 1857.

The Annals and Magazine of Natural History, No. 116, Aug. 1857 and an old No. 102 to supply the file.

Revue des Deux Mondes, 15th July and 1st Aug. 1857.

Revue et Magasin de Zoologie, No. 6, 1857.

Journal des Savants, June and July, 1857.

The Quarterly Review, No. 203, July 1857.

On the Variation of Species with special reference to the Insects; followed by an enquiry into the nature of Genera, by T. V. Wollaston, *London*, 1856, 12mo.

The Kingdom and People of Siam; with a narrative of the Mission to that country in 1855. By Sir John Bowring. *London* 8vo. 2 vols.

Bratárká—a Sanskrit printed Seetee, on the subject of the religious vows of Hindus, *sheets*, edited by Jaleelwauld Pundit.

Abú'l-Mahásin 'Ibn Tagri Bardii Annales, quibus titulus est

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e Codd. MSS. nunc primum Arabice editi. Tomi IIi. Partem priorem, edidit T. G. J. Juynboll. Lugduni Batavorum, 1857. 1 Copy.

Symbolæ ad rem numariam Muhammedanorum. Edidit Carolus Johannes Tornberg, III. *Upsailiæ*, 1856, pamphlet.

Report of Curator, Zoological Department.

From C. G. T. Lloyd, Esq. of Bryn Estyn, New Norfolk, Tasmania, the following collection, of which the species new to our museum are distinguished by an asterisk.

Mammalia.

HYDROMYS CHRYSOGASTER, Geoffroy. Far more brightly coloured than specimens from Pt. Philip in our collection, presented in 1846 by Mr. Benson. *N. B.*—Mr. Gould, if we mistake not, figures about five races of HYDROMYS as distinct species.

DASYURUS VIVERRINUS, (Shaw). Two brown specimens. *N. B.*—Both this and a distinct species with spotted tail (D. MACULATUS) inhabit Tasmania, and we have both in the museum.

PHALANGISTA VULPINA, (Shaw). Three fine specimens; two of the ordinary colouring, similar to examples from Pt. Philip and N. S. Wales; the third melanoid, and illustrating the *Ph. fuliginosa*, Ogilby.

*PHASCALOMYS WOMBAT, Peron and Lesueur. A very fine skin of this extraordinary rodent marsupial.

ORNITHORHYNCHUS ANATINUS, Shaw.

Aves.

EUPHEMA CHRYSOSTOMA, Wagler. Two specimens.
LATHAMUS DISCOLOR, (Shaw). Ditto.
GLOSSOPTILA AUSTRALIS, (Lath.). Ditto.
IERACIDEA BERIGORA, (Vigors and Horsfield).
CUCULUS INORNATUS, Vigors and Horsfield. Ditto.
*PODARGUS CUVIERI, Gould.
OREOCINCLA LUNULATA, (Latham).
PETROICA PHŒNICEA, Gould. Two specimens.
*CALAMANTHUS FULIGINOSUS, Gould.
CINCLOSOMA PUNCTATUM, (Lath.) Two specimens.

* This difficult group of Thrushes has been elucidated by the Prince of Canino, in the 'Revue et Magasin de Zoologie,' No. 5 for 1857: but His Highness had not examined the O. NILGIRIENSIS, nobis, which is a particularly well characterized species. It most nearly resembles O. LUNULATA; but the colouring of the upper-parts is much more ruddy; the tail (of 12 feathers) is 1 in. shorter, and instead of being slightly cuneiform, tends rather to be subfurcate, but with its outermost feathers a trifle shorter than the rest; the bill, as long as in O. LUNULATA, is very much more slender, and the tip of the upper mandible is more prolonged; the tarse also is conspicuously shorter; and the small first primary is more developed. Length of wing 5 in.; of tail 3½ in.; bill to gape 1½ in.; tarse 1 in.; and short first primary 1⅜ in. Lower mandible of a pale colour. In three mottle-backed species under examination, *viz.* O. DAUMA (from the Hindustáni word *dáma*, 'a Thrush'), O. LUNULATA, and O. NILGIRIENSIS, the distinctions are exceedingly well marked.

ARTAMUS SORDIDUS, (Lath.)
ANTHOCHÆRA INAURIS, Gould. Two specimens.
PTILOTIS FLAVIGULA, (Gmelin.) Ditto.
MELIORNIS NOVÆ HOLLANDIÆ, (Latham.)
MANORHINA GARRULA, (Latham).
*SCOLOPAX AUSTRALIS, Gould.
TRIBONYX MORTIERI, Dubus.

Reptilia.

CYCLODUS GIGAS, Boddaërt.

From the Hon'ble W. Elliot, C. S., Madras. The skin of a Marten, forwarded on loan through Mr. Grote, *habitat* not stated. It represents a fourth race of the MARTES FLAVIGULA type; equivalent to those of the Squirrels which are brought together by Prof. Temminck under the general name of SCIUREUS GIGANTEUS, but which most systematists recognise under different names. These races are as follow:

1. MARTES FLAVIGULA of the Himaláya and mountains of Arakan. Blackish-brown face, cheeks, and nape, abruptly demarcated; chin and throat white: breast and fore-part of the body pale yellowish-brown, mostly darker along the middle of the back, and passing to blackish-brown on the croup, fore-limbs, hind-quarters, and tail.

2. M. GWATKINSII, A. Smith, of the Nilgiris. Entire upper-parts blackish-brown, with the white throat and yellowish breast of the last. In other respects similar.

3. M. FLAVIGULA apud Cantor, from the Malayan peninsula. Similar to No. 1, but the fur much shorter, and tail consequently less bushy; the blackish cap merely indicated by pale-brown, but with a perephyral dark line passing from behind each ear. Of this race I have seen numerous specimens, all true to the particular colouring.

4. M. Elliot's animal. Upper-parts nearly uniform brown, paler on the sides, chin, throat, and breast, as on the others; the lower-parts dark, with some irregular blackish spots between the fore-limbs: perephyral blackish mark behind the ear, continued less distinctly forward; the brown of the crown and nape less dark than in No. 1, and continued uniformly on the shoulders and croup, scarcely paling along the middle of the back: tail much browner than in the others, and the limbs scarcely so dark. Possibly a variety of No. 2.

JOURNAL

OF THE

ASIATIC SOCIETY.

No. V. 1857.

Comparative Vocabulary of the Languages of the broken Tribes of Népál.—*By* B. H. Hodgson, *Esq.*, *B. C. S.*

Darjiling, October 4th, 1857.

The Secretary of the Asiatic Society of Bengal.

Sir,

I have the honour to transmit to you herewith four series of Vocabularies of Himálayan tongues, comprising, (in two parts), 1st, the languages of the broken tribes of the Central Himálaya; and, 2nd, (also in two parts), the several dialects of the Kiránti language, which likewise is proper to the same part of the chain, or, to be more specific, to Eastern Népál. The languages included in the two parts of these two papers are—

Broken Tribes.

1. Dahi or Darhi.
2. Dénwár.
3. Pahi or Pahari.
4. Chépáng.
5. Bhrámu.
6. Váyu or Háyu.
7. Kuswár.

8. Kúsúnda.
9. Pákhya, unbroken.
10. Thákṣya, unbroken.
11. Tháru.

Tribes of the Kiránti people.

1. Chamling or Ródóng.
2. Rúngchhénbúng. Bontáwa.
3. Chhingtáng. Bontáwa.
4. Nachhereng.
5. Wáling. Bontáwa.
6. Yákha.
7. Chourásya.
8. Kulung.
9. Thulung.

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10. Báhing.
11. Lohorong.
12. Lambịchhong. Wáling.
13. Báláli.
14. Sángpáng
15. Dumi.
16. Kháling.
17. Dungmáli.

The arrangement and nomenclature of these, made some time back, are not quite correct. But they will serve the present end and can be corrected when we come to particulars. At present it will suffice to say that 9 and 10 of the "broken tribes" cannot well be classed under that head, the Pakhya and Thaksya being still unbroken.

Of the Kiránti tribes, the value of the subdivisional names is not always equal. I have indicated this on the right hand. Thus, 2, 3, 5, as to language, &c., could be unitised under the common name of Bontáwa; and 5-5 both classed first as Waling, and then as Bontáwa, the larger aggregate. These minuter affinities are pretty

well indicated by the dialects. I was obliged to begin in the dark as to what varieties of the language would be fittest for selection as dialects, and those I hit on were not always of equal value.

As samples of the broken tribes and of the great Kiránti people I have lately selected for special study the Váyu of the one and the Báking of the other. I shall forthwith submit these ample essays and then may find time to advert to some general considerations. If not, they will be found in the new essay on the Physical Geography of Himalaya now issuing from the Calcutta press.

I am,
Sir,
Your obedt. servt.,
B. H. Hodgson.

English.	*Darâhi vel Dahi.*	*Dénwár.*	*Pahrí vel Pahi.*	*Chépáng.*	*Bhrámú.*	*Háyu, or Váyu.*	*Kuswár.*
Air	Batás	Bátás	Phú-sá	Má-rú	A-sí	Hujum	Batás
Ant	Cheunta / T-seu-n-ta	Cheu-ti / T-seu-ti	Mig-za	Túl-ti	A-nap	Chiki-bulla	Kimili
Arrow	Kánr	Kánr	Bá-rá	Lá	Pá-rá	Sár	Sár
Bird	Chárí	Chárâï	Bú-khíncha / Bu-khin-cha	Wá. Mó-á	Jyá-ling	Chín-chí	Chárí
Blood	Rágát	Ráktâï	Hí	Wé-í. W í	Chí-wí	Ví	Rakti
Boat	Dúngo. Dun-go	Dúnga. Dun-ga	Dón-ga	Dún-gá	Dun-ga	Dun-ga	Dun-ga
Bone	Had	Had	Ku-sá	Rhu-s	Wot	Rú	Hadh
Buffalo	Bhainsa	Bhainsi	Mé-sá	Mí-syá.	Bhai-sa	Caret	Bhainsa
Cat	Birálo	Mai-ni	Bhí	Bírál	Manzyi	Dána	Bírálo
Cow	Gai	Gai	Mó-syá	Mó-syá	Syá	Caret	Gai
Crow	Káwá	Kowa	Kó-kó	Kág. Ká	Káng-kang	Gá-gín	Kág-lé
Day	Din	Di-ni	Nhí-na-ko	Nyí. Ngí	Di-ná	Nu-ma	Di-ní
Dog	Kúkúr	Kú-kúr	Ku-ju. Ku	Kwí. Kúí	A-kyá	Urí	Ku-kol
Ear	Kán	Kán	Nhúa-puru	Né. Nó	Ká-ná	Nak-chú	Kán
Earth	Máti	Máto	Chá	Sá	Ná-sá	Kó	Mati
Egg	Anda	Dimba	Khén-ja	Wá-kúm. Lu-m	Hom	Chalung	Dimba
Elephant	Hathi	Hattí	Ki-si	Há-thi	Caret	Caret	Hathi
Eye	Ánkhí	Ánkhá	Mí-gi	Mi. Mi-k	Mi-k	Mé-k	Ánkhi
Father	Búbó	Bábá	Bá	Ba-bú	Ba-bái	U-pá	Bábáïk
Fire	Á-gé	Agi	Mí	Mé. Mí	Má-ï	Mé	Ághi
Fish	Má-chha	Ma-chhe	Nyó-já	Nyá. Ngá	Ná-ngá	Hó	Jhá-in
Flower	Phúl	Phúl	Só-nó	Dó. Ró	A-wai	Púm-mí	Phúl
Foot	Gód	God	Lí	La	Un-zik	Lé	Gor
Goat	Chág-ri / Cha-g-ri	Chá-gár / Cha-ga-r	Chá-lá	Mé-syá. Mí-chá	Mí-chha / Mí-ch-ya	Chí-lí	Chá-gari / Cha-ga-ri
Hair	Bár	Bár	Són	Mén	Syám	Sóng	Bár
Hand	Hát	Háth	Lá	Kút-t. Kú-t-pa	Bhi-t	Gót	Háth
Head	Múd	Mú-dek	Chhé	Tá-Tó-long	Ká-pá	Pú-chhi	Ká-pá
Hog	Sú-er	Sú-gúr	Phó	Pyá. Pyák	Pak-syá	Póg	Sú-ri

Horn	Sing	Sing	Mhú-ní	Ró-ng	Ư-nyá. Ưn-yú	Ru-ng	Sing-ek
Horse	Ghóro	Ghóra	Sa-ro	Sé-rang	Caret	Caret	Ghóra
House	Ghar	Ghar	Chén	Tim. Kyim	Nam	Kim	Ghara
Iron	Phalám	Phalám	Né	Phalám	*Phaiám*	Ka-k ching	Phalám
Leaf	Pát	Páta	La-ti	Ló	Sou	Ló	Páta
Light	Ư-jung	Ư-jat	Ja-la	{ Sa-mo. An-gho / Ang-ha }	Caret	Dang-dang	Johan. Joha-n
Man	Má-nus	Má-nus	Man-che	Pur-si	Bal. Bar	{ Sing-tong / Lon-cho }	Gok-chái / Chá-wái
Monkey	Banker	Bandar	Mú-ga	Yú-k	Pá-yúk	Phó-ka	Báner
Moon	{ Já-nhá / Já-n-há }	Jyún	Nhí-bá	La-he. La-me	{ Chala-wani / Cha-la-wa-n }	Chó-lo	Jún
Mother	Ư-yá	Am-báï	Mí	A-maí	A-maí	U-mé	A-mái
Mountain	Dánda	Pá-khá	Tó-lhá	Rí-ás	Dánda	Chyá-jú. Wa-ne	Pahár
Mouth	Mú-húm	Mú-húm	Mhú-r	Mó-tong	A-nám	Múk-chu	Mú-hú
Muschito	Kón-kón-ya	Ghú-suná	Pa-ti	Caret	A-mín	{ Eks'a-mék / (Night-eye) }	Pip-sa. Bhun-si
Name	Ná-yám	Ná-u	Nu-ng	Myéng	Min	Ming	Nou
Night	Ráto	Ráting	{ Chá-nâkô / Chan-ko }	Yá	Caret	E'k-sá	Ráthi
Oil	Tél	Tél	Sú	Sáté. Lí-ko	A-sá	Kí	Tél
Plantain	Kéra	Kéra	Mó-syi. Mozyí	Mlé-sai. Mai-sé	Ung-syé	Rí-sá	Kéra
River	Khó-lá	Lá-rí	Khá-rá	Kyú. Gó-ro	Gú-dúl	Gang. Bimbo	Kó-si
Road	Pán-ya	Bát	Lóng	Lyám	Ưm-má	Lóm	Bát
Salt	Nún	Nún	Chí-há	Sé	Chhá	Chíä	Nún
Skin	Chá-la	Chá-la	Chúg-ra	Caret	Caret	Kók-chó	Chá-la
Sky	Sa-ra-g	Sá-rá-g	Sá-rá-g	Sá-rá-g	Caret	Caret	Sá-rá-ng
Snake	Sámp	Sámp	Bí	Lú	Páí-gú	Hó-bú	Sámp
Star	{ Tí-ryá / Tí-r-yá }	Tá-rái	{ Nú-ng-gí / Nung-gni }	Ka-r	Caret	Caret	Tára-ï
Stone	Pá-thár	Don-kho	{ Lhong-go / Lho-ng-g-no }	Báng	Kúng-bá	Lún-phu	Pathár
Sun	Gá-má	Gá-má	Su-je	Nyám	U-ní	Nó-mó	Súraj
Tiger	Bág	Bág	Dhún	Já-ké-la & Já	Bú-máng	Bílo	Bághi
Tooth	Dánt	Dánt	Wá	Srék	Sú-a. S-wá	Lú	Dant

English.	*Darâhi vel Dahi.*	*Dénwár.*	*Pahrí vel Pahi.*	*Chépáng.*	*Bhrámú.*	*Háyu, or Váyú.*	*Kuswár.*
Tree	Rúk	Gátch	Sí-má	Si-ng. Sing-tak	Sim-ma	Sing-phung	Gátch
Village	Gáon	Gaon	Gón	Caret	Háng-dúng	Caret	Gáon
Water	Pa-tí	Kyú	Lú-khú	Tí	Á-wá	Tí	Páni
Yam	Pin-álu	Chó-yán	Sá-gí	Gó-í	Yá-k	Rá-pí. Chó-pi	Gé-ti. Bhyá-gar
I	Máï	Múï	Núng & Já	Ngá	Ngá	Gó	Má-ha
Thou	Taï	Tu-ï	Chhúng. Chhí	Náng	Náng	Gon	Tá-ha
He. She. It	Ư	Ï	Hó. Ư	Ư	Ư	Mü. Wáthi. Á. Ï	Hú-lo. Há-lo
We	Há-mi	Hami	Já-di	Ngí-lum	Ní	Gókháta	Há-mi
Ye	Ta-he	To-ho	Chhá-di	Ning-lum	Núng	Góne-khata	Tú-mi
They	Ư-nin	Ư-ho	Ư-si. Ho-si	Wó-mai	Hú-dú	Mïï-khata, Kó-me. Á-mé	Hú-ri. Há-ri Há-ring
My	*Mé-ro*	*Mo-ra*	*Núng-gu. Já-gu*	*Ngá-ku*	*Ngá-ku*	*Ang or Ang-mu*	*Má-ha-na* / *Suffix, im*
Thy	*Té-ro*	*Tó-ra*	*Chhúng-gu*	*Náng-ku*	*Nang-ku*	*Ung or Ung-mu*	*Ta-ha-na* / *Suffix, ir*
His. Hers. Its	*Ư-ker*	Wok-rak	*Hong-gu* / H-wang-gu	*Ư-ku*	*Ư-ku*	*Mi-nong.* Wa-thi-m. A-mu	Hú-lo-kara / Suffix, ik
Our	Ham-ro	Ham-rai	Já-gu	Ngí-ku	Ní-ku	Ang-ku / Ang-ki-mu	Hamára
Your	Taha-ro	Caret	Chhá-gu	Ning-ku	Núng-ku	Ưn-ni. Ưn-ni-ma	Túmára
Their	Ưn-karo	Wal-ko	As-ya-gu. Asya-gu	Ư-mai-ku	Ưn-kú	Mí-khata-mu / Ákhata-mu. Kó-me-khata-mu	Háring-kara
One	E'k	E'k	Chhí or Chhi-gu	Yá-zho. Ya-z-yo	Dé	Kó-lú	E'k
Two	Dwi	Dwí	Ní or Ni-ng-gu	Nhi-zho. Nhi-z-yo	Ni	Na-yung	Dwí
Three	Tin	Tin	Súng or Sung-gu	Sum-zho. Sum-z-yo	Swóm	Chu-yung	Tin
Four	Chár	Chár	Pi or Pi-ng-gu	Plóï-zho. Plo-ï-z-yo	Bí	Bí-níng	Chár
Five	Pánch	Pánch	Ngo or Ngo-ng-gu	Pú-ma-zho / Pu-ma-z-yo	Bá-ngá	Caret	Pánch
Six	Cháh	Cháh	Khú or Khu-ng-gu	Krúk-zho / K-ru-k-z-yo	Caret	Caret	Cháh

Seven	Sát	Sát	Nhé or Nhe-ng-gu	Cháná-zho / Cha-na-z-yo	Caret	Caret	Sát
Eight	Áth	Áth	Chyá or Chya-ng-gu	Prap-zho / Prap-z-yo	Caret	Caret	Áth
Nine	Nó ú	Nó-ú	Gún or Gung-gu	Taku-zho / Taku-z-yo	Caret	Caret	Nó-ú
Ten	Das	Das	Gí or Gi-ng-gu	Gyí-b-zho / Gyi-b-z-yo	Caret	Caret	Das
Twenty	Bís	Bís	Ní	Caret	Caret	Caret	Bís
Thirty	Tís	Tís	Sun	Caret	Caret	Caret	Tís
Forty	Chálís	Chálís	Pí í	Caret	Caret	Caret	Chálís
Fifty	Pachás	Pachás	Ngé-é	Caret	Caret	Caret	Pachás
Hundred	Sou	So	Sá-chi	Caret	Caret	Caret	Sou
Of	Kó	Ík. Ak	Yá. Yágu	Kú	Kú	Mu. Mo. Mi	Ná. Kara
To	Lai	Ki	Yá-ta	Sáï	Tú	Caret	Láï
From	Nhé	Sún	Áng	Í	Jáng. Gáng	Khen	Bátho. Dékhi
With	Súï	In	Nang	Í	Chou	Nong	Sin
In. On	Yér. Hér	In	Gar-hi-né	Háng	Thá-chi	Bé	Kana
On. Upon	Uparé	Uparé	Caret	Caret	Gáï	Bé. Wane	Kana. Te. E'
Now	Yéhe	Akhan	Alaga	Caret	Tha-chi	Um-be	Já-khen
Then	Wóhe	Takhen	Wélhe	Caret	Wá-lhé	Mé-the	Á-khen
When	Káhe	Kanhin	Gwé-thé	Caret	Kai-lhé	Há-ké	Ka-khen
To-day	Áju	Á-ju	Tha-ra	Té-n	Ti-ya	Ti-ri	Á-ja
To-morrow	Kálú	Ka-lhi. Ka-l-hi	Kín-chi	Syáng	Wó-gai	Ná-kana	Kál-hi
Yesterday	Kálú	Ká-lú	Mi-zyé	Yón	Mi-lya	Tí-jong	Kal-hai
Here	Í-chi	Yé-ti	Thúgu-thá	Caret	Hí-di	Í-ne. I-the	Achi-na
There	U-chi	Wo-ti	Hong-tha	Caret	Hú-di	Mí-ne. Wa-the	U-chi-na
Where	Ká-chi	Ká-chi	Gu-thá	Caret	Ku-nai	Há-né	Ka-chi-na
Above	Upara	Akásai	Cho-gu-tha	Caret	Hú-khai	Wa-ne	Upara
Below	Hét	Hé-then	Ko gú-thá	Caret	Hu-mai	Hu-the	Hét
Between	Májhai	Majhen	Dári	Caret	A-sal	Mádúm-be	Manjhi
Without. Outside	Báhir	Báhir	Pen-há	Caret	Am-bu	Tongma. Lok	Báhir
Within	Bhitar	Bhitar	Dohón	Caret	Tyka. Náng	Neng. Bék	Bhitar
Far	Tárho	Tar-hai	Ta-pa-le	Dyáng-to	Ka-lók	Ho-lám	Dú-re
Near	Ná-gík	Yén-chi	Nhyár-ke	Lok-to	Ka-nyák	Khé-wa	Pas-yong

English.	*Darahi vel Dahi.*	*Dénwár.*	*Pahrí vel Pahi.*	*Chépáng.*	*Bhrámú.*	*Háyu, or Váyú.*	*Kuswár.*
Little	Chút-hi	Chút-ek-pe	Bhá-chá	Caret	Són-bi	Ití-bang	Thó·e
Much. Many	Dhérai	Dhéré	Chó-hóng	Jhó	Búd-he	Ching-ngak / Sing-ye	Dhére
How much	Kat'-ha	Kat'-ha	Gu-ri	Caret	Ku-wa	Há-thá	Katak
As	Ja-sai	Já-nhé	Gé-ré	Caret	Jún	Háng-nga	Jásege
So	Wó-sai	Tá-nhé	Hé-ré	Caret	Ưchi	Mé-má	Há-sege
Thus	Yé-sai	Ye-nhe	Yé-ré	Caret	Hé. Kháksá	Ỉ-ma	Ỉ-sege
How?	Ká-sai	Ka-nhe	Gi-re	Caret	Hé-tu	Húng-ngá	Ká-sege
Why?	Caret	Caret	Caret	Caret	Caret	Mis-pa	Kyú-hún
Yes	Hó	Té	Khyú	Caret	Mó. Lik	Dik-sa. Nom	Ah. An
No	Hŏï-né	Boy-in	Má-khí	Caret	Mami. A-lik	Má. Ma-nom	Ná
Do not	Jún	Jú-nú	Mí-re	Caret	Man	Thá	Má-má
And	Ra. Pún	Sá. Súá	Khá	Caret	Wóng	Lé	Gyú
Or	Tí	Láne. Né	Kí. Lá	Caret	Ké	Ki	Ná
Which. Jón	Ỉse-k	Ỉ	Árkhyá-gu	Caret	Hé-tu	Sú-do	Jé
Which Tón	Ư-se-k	Ư	Hórkhyá-gu	Caret	Hó-tu	Mí-do	Húle
Which? / Who? } Kon	Kó-no	Kó-hik	Gú-gú. Gu-hmo	Caret	Hai	Sú	Ké
Something	Kyá-hú-je	Ki-chhu	Chala	Caret	Háng	Mís-che	Ké-hu
Somebody	Kólho-pun	Kó-lhu	Súnung	Caret	Súng	Sú-na	Ké-hu
Good	Niko	Sajhá	Bhing-gu-hma	Pi-to	Gá-dó	Nuh-'kámo / Nuh'ka-mo	Bhala
Bad	Bón-tha	Bón-sajha	Ma-bhing-gu-hma	Pi-lo	Ma-dó	Maning-nuh -kamo	Nakhaja
Cold	Chíso	Chíso	Khu-khu-dha	Yés-to	Chíso	Khémta	Chíso
Hot	Tá-to	Ta-to	Kwá-gu-hma	Dhá-to	Ư-dúm	Jé-ta	Tá-to
Raw	Ká-cho	Caret	Ka-zhi-gu-hma	Caret	Pón	Chala-mo	Ká-cho
Ripe	Pá-ko	Caret	Bú-gu	Caret	Ki-míng	Mín-mo	Pá-ko
Sweet	Gúre	Gúryo	Chág-gu	Ním-to	Kyó-syá	Chin-ji-mo	Gúlyo
Sour	Syí-syé	Ko-ro	Pa-lu-gu	Ním-lo	Kyá-só	So-kim. So-ki-m	Ná-gúlyo
Bitter	Ti-ta	Ti-ta	Khá-khá-dha	Caret	Kyá-khai	Khá-chim / Kha-chi-m	Títo

Handsome	Rámro	Caret	Bángla-gu-hma	Dyáng-to	Ku-syén	Bing	Banaila
Ugly	Inje-ramro	Caret	Bámala-gu-hma	Pi-lo	Má-syón	Mam-bing	Nakhaja
Straight	Sojhó	So-lar	Ti-pyúng-gu-hma	Dhím-to	Caret	Chéng-chéng-mo	Sójho
Crooked	Kwón-káro	Bán-ko	Phara-só-gu-hma	Dóng-to	Báu-go	Ko-ko-láng-mo	Bángo
Black	Kaj-ráro	Kár-da	Há-ku-gu-hma	Gal-to	Chi-ling	Khák-ching-mi	Kal-da
White	Góro	Goró	Túyú-gu-hma	Bhám-to	Á-bo	Dawáng-mi	Pán-dal
Red	Rak-ta-ro	Rak-ta-ro	Sí-dha-gu	Dú-to	Pháya	Lang-ching-mi	Píl-la
Green	Haryo	Harro	Wón-wón-dha	Phélto	Sik-sik	Girúng-mi	Hardiálo
Long	Lámo	Lámo	Tá há-gu	Caret	Kíwo. Alhok	Phín-ta	Lámo
Short	Chóti	Kháto	Púti-ha-gu	Caret	An-yak	Mam-phín-ta	Chóto
Tall } man	Dhénga	Algo	Tha-so	Caret	Alhok	Jóng-ta	Algo
Short } man	Nanar	Hócho	Khó-so	Caret	Anyak	Thó-thi	Hó-cho
Large	Bát-ko	Bat-ke	Hwongu-dha-gu	Bron-to	Alham	Hóng-ta	Bara
Small	Nání	Chot-ke	{ Chí-ja-gu / Chigi-dha-gu }	Mai-to. Ma-yo	Á-mi	Choh'-mi	Ybra
Round	Dallo	Dúmro	Gó-ná-gu	Caret	Dallo	Kúl-kúl	Dal-lo
Flat	Chep-to	Chep-to	Pherchya-kyen-gu	Caret	Nim-bu-le	Teng-teng	Sambh
Square	Char-konya	Caret	Pekúng-la-gu	Caret	Chárpatya	Caret	Chárpatya
Fat	Móto	Móto	Lhóng-hmo	Caret	Ki-chho	Lón-ta	Moto
Thin	Dúbró	Dú-bro	Gang-si-hma	Caret	Má-chho	*Gér-ta*	Khéngralo
Weariness	Thá-kin	Hadyaila	Nél-nu. Ngal-nu	Caret	Kitu-khwi	Jób	Caret
Thirst	Pias	Tirkha	Pyá-há	Caret	Áwâphang	Tí-daksa	Tirkha
Hunger	Bhú-kha	Bhúk	Ha. He-nu	Caret	Uyangkéhé	Sóksa	Bhók
Eat	Khóu	Khá-ik	Né	Jé-che. Jhí-sa	Chá	{ Já-che. n. / Ja-ko. o. }	Khá-ik
Drink	Pyú	Khá-ik	Tó-*in*	Túm-che. Tum-sa	Syá-ngá	{ Túng-che. n. / Tung-ko. a. }	Khá-ik
Sleep	Sút-uk	Sút	Dyú*n*	Em-che. Yem-sa	Ná-wa	Im'-che	Sut-ou
Awake	Chétas. Chet-as	Uth	Dó*n*	Tyok-che. Tyok-sa	Só-wa	{ Thá-im'-che / Sis'-che }	Uthou. Uth-ou
Laugh	Hans-uk	Rhyás. Rhi-as	Nhí-li	Nhí-s-che. Nhí-sa	Nú-ya	Ís-che. Yès-che	{ Hás-kou / Hask-ou }

2 B

English.	*Darahi.*	*Denwár.*	*Pahrí or Pahi.*	*Chépáng.*	*Brámú,*	*Háyu or Váyú.*	*Kuswár.*
Weep	Ró-uk	Hán	Khwé	Rhí-as-che. Rhi-a-sa	Há-pá	O'k-che	Da-ka-rou / Da-ka r-ou
Speak	Bóră-uk	Sa-rha	Lhá	Nhó-s-che. Nho-sa	Kha-lá-wa	It'. Dáwa-hot. Bót*	Bar-ou / Ghan-ou†
Be silent	Jŭnbora-uk	Júnsá-rhá	Sunán-chón	Caret	Má-pé. Má-khale	Thá-it [che / Gyúng-pon-	Mámá-bor-ou. Mama-bor-ou
Come	Á-úk	An	Yá	Caret	Thá-yá	Phí‡	Ábe
Go	Já-úk	Já	Lá-són	Caret	Yé-ngá. Yen-ga	Láh'-lá	Ná. Ná-hin
Get up	Ŭth-úk	Ŭth	Dáïng-chon	Ching-sa	So	Y'ép-che	Uth-ou
Sit down	Bas-uk	Bas	Kujung-chon	Mús-che. Mu-sa	Mú-ká	Mós-che	Basou
Walk	Hid-uk	Chól	Gó	Whá. Whá-sa	Syó. Jéwa	Khók-che	Nón
Run	Dú-gar-uk	Dúgar	Kéng-gno / Ke-in-go / Ke-ng-go	Kí. Kísa	Gé-gwé-ya	Lúng-che	Dhou
Give	Đi-hik′	Dí-ik′	Bí-chhon	Bú-ï§	Pyú	Há-to	Dé-ik
Take	Lé-hik	Lé-ik′	Há-ya	Lé-ï	Thá-yo	Dó-ko	Né-ik
Strike	Thá-thá-ik	Már-ik′	Dá-chhon	Caret	Mó-to	Toh'-po	Thá-tha-ik
Kill	Káti-ik	Már-ik′	Pá-li	Caret	Sáto. Apríto / A-pri-to	Sísh-to / Yúk-to	Hirka-ik
Bring	An-ik	Ánhik′	Bú-yá	Caret	Khaï	Pish-to	An-ik
Take away	Léj-ik	Léga-ik′	Búlásón. Bú-lá-son	Caret	Yáng-gnó / Ya-n-go	Lák-to. La-k-to	Né-hin
Lift up	Bok-uk	Algá-ik′	Bú-gno. Bu-n-go	Caret	U-yo-gno / U-yo-go	Ré-ko	Alga-ik
Put down	Rák-uk	Dhár-ik′	Tí-gne. Tí-n-ge	Caret	Caret	Tá-ko	Thé-ik
Hear	Sún-kare	Sún	Nyú	Sáï	A-só-yo	Hón-ko. Thá-ko	Sunou
Understand	Bújh-kare	Bújh	Thú-í	Caret	Báz-dyú	Sé-ko	Bujhou
Tell. Explain.	Ká-huk	Sa-rha	Kyén	Nhó-s-che	Chí-só-yo	Ish'-to. Boh'-to	Ghanai-ik

* Throughout the Háyú column che suffix is the reflexive sign: to, ko, vel po, the transitive; it, hot and bot are contractions for i-to vel ish-to, ha-to and bo'-to. As nature suggests, in point of sense both signs are applicable: thus, ish-che, speak to thyself, articulate: ish-to, speak to him, to some one: Ha-s-che, give to thyself: ha-to, give to him. Sis-che, learn = teach thyself: sish-to, teach another. In the other tongues which are losing these niceties, they are less clearly explicable.

† Ou is the neuter or reflexive formative, as ik is the active and added su makes the former passive, e. g. From ghan, root to speak, ghan-au-mi, n, I speak, utter. Ghan-ou-su, m-mi, p: and ghanaimik-an, a. = ghana-im-ik-an, told I him or it. I told it or I told him.

‡ Phi is a sample of the primitive and neuter verb. There are several other samples in the other columns. See P. S. at the end.

§ Ï vel ya of Pahi, Chépáng, and Brámú is the transitive or active sign, as in Newari and Telugu, though unrecognised as such in either.

Continuation of the Comparative Vocabulary of the Languages of the broken Tribes of Népál.

English.	*Kusúnda.*	*Pákh'ya.*	*Thák'sya.*	*Thâru.*
Air	Kái	Bayálo	Nammar	Bayár
Amaranth, (the grain)	Bhartu	Bethyáng	Bhendo	Rámdáná
Ant	Pyai ki	Krímula	Naṭo	Doká
Arm	Táü bi	Hát H. K.	Yá	Hát
Arrow	Muyu	Káḍha H. K.	Tumé	Khánḍha
Barley	Jo	Jou H.	Chíka	Jau
Bird kind	Kotau	Cháḍa H. K.	Nom'ya	Chirai
Ditto male	Gyá kotau	Bhálya cháḍa K.	Nom'ya dhó	Chirai
Ditto female	Gimi kotau	Póthi cháḍa K.	Nom'ya íso	Chirai
Bitch	Agaigimi	Kyatáï chhowri	Nagamoma	Pilli
Blood	Uyú	Ragat H. K.	Ká	Lohu
Boat	Wai. Wou	Dúga K.	I'saba	Náu
Boar	Yásagyá. Higyá	Baigan harra	Tili	Suwar
Boiled rice	Káddi	Bhát H.	Bhát H.	Bhát
Bone	Gou	Háḍ H.	Nati	Háḍ
Boy	Tala sáï	Kéta K.	Kala chája	Ketá
Buffalo kind	Mahi	Bhaínsa H. K.	Mai	Bhaisa
Ditto male	Máhi-gyá	Bhaínsarángo K.	Mai rágo	Bhaisá
Ditto female	Máhigimi	Máu bhaínsa	Mai móma	Caret
Bull	Nogmwa gyá	Ballasáḍh H.	Hméyese	Sáḍha
Cat kind	Birálo	Billo H.	Nobar	Birála
Ditto male	Birálo gyá	Dágo birálo	Nobar kho	Birála
Ditto female	Birálo-gimi [gyá	Chháuri birálo	Nobar hmo	Birála
Calf male	Nógmwachyáchi-	Báchho H. K.	Hméchaja	Báchhá
Calf female	Nogmwachyáchi gimi	Bad	Hmé chájasimo	Báchhi
Child kind	Gitasé. Chyáchi	Chhóra chhóri Kétakéli K.	Álópichám	Ladikábálá
Child male	Gitasé	Kéta. Chhó ra K. Nánu bálakha H.	Kalachája	Ladiká
Cow	Nokmwa gimi	Gái H.	Hmémama	Gáye
Cock	Tab'gyá	Bhálya kukuḍḍo K.	Caret	Mur'ga
Crow	Kaúwa H.	Kág H.	Ghábráng	Kaúwa
Daughter	Taksé	Chhóri K.	Chame	Béti
Day	Dina	Diüso K.	Sar	Dina
Dog kind	Agai	Kyatáï	Nága. Nak'yu	Kútta
Dog male	Agai gy'a	Kyatáï dango	Nak'yughyutya	Kútta
Ear	Chyáü	Kán H	Hna. Nha	Kán
Earth	Doma	Máto H.	Sa	Máti
Egg	Góä. Gwá	Phul K.	Chhyárkyaphúm	An'da
Elephant	Hátti gyá	Hátti H.	Lam'bochhé	Hathi
Ditto female	Hátti gimi	Mákuna H.	Lam'bochhémhyo	Háthi
Ewe	Ghalogimi	Caret	Ghyúmama	Bheti
Eye	Chining	Aṇkhá H.	Mi	Aṇkh
Face	Hángná	Muḍhá H.	Lí	Muhu
Father	Páï	Babaï	Ábo	Bábá
Fire	Já	Ágo H. K.	Hmé	Ági
Fish	Gnása	Máchhá H.	Trang gná	Machheri
Flower	Gipoán	Phul H.	Ro	Phul
Fowl kind	Táp	Kukura K.	,,	,,
Foot	Chán	Phala H. ,,	Malethin male	Pángo góḍa
Fruit	Yegiyan		Phum	Phar

English.	*Kusúnda.*	*Pákh'ya.*	*Thák'sya.*	*Tháru.*
Girl	Taksé	Keti (K.)	Mrin	Laḍiki
Grain	Kadiyun	Caret	Caret	Anaj
Goat kind	Míjha	Boko K.	Rámo	Chhegaḍi
Goat male	Míjha gyá	Boko K.	Rámogyá	Chhegaḍi
Goat female	Míjha gími	Bákhro K.	Rámomá	Baghiya
Hair	Gyai-i	Ráwa	Chham	Bár
Hand	Gipan	Hatkela	Yáyáthin	Tar hatti
Head	Chipi	Manto [(K.)	Ta	Muḍi
Hen	Táp gimi	Kukhurako pothi	Caret	Murgi
Hog kind	Hí. Yása	Har'ra	Tili	Suwar
Horn	Iping jing	Sing H. K.	Ru	Sing
House	Báhi	Ghar H. K.	Ghim	Ghar
Husband	Dúwói	Lóg nyá (K.)	Mrinthin	Caret
Iron	Phalám	Khaḍar	Phré	Lóha
Leaf	Hák	Pát	Lhá	Pátá
Leg	Nawágichán	Goḍá	Bhale. Bhalethin	Goḍ
Light	Jina ikya	Urt bátti	Muthnangmu	Anjoriyo
Maize	Makai	Ghóga	Makai	Makáya
Man kind	Mih'yák	Manchha	Mli	Manhai
Ditto male	Mih'ya dawái	Log nyá (K.)	Pyung	Caret
Mare	Caret	Caret	Támáma	Ghoḍi
Millet or Konganï	Kwá chhó	Caret	Dhéya	Tágnun
Millet or Kodo	Máḍyi. Mazyi	Kódo	Rangre	Maḍúwa
Monkey male	Ugu	Bádar H. K.	Pángdar	Bánar
Ditto female	Ugu gimi	Bádarni H. [K.	Pángdarsyá	Bádari
Moon	Jun	Chan'dramabel' H.	Láti gná	Chand'ramajún
Mother	Máï	Á'má	Á'má	Mahatári
Mountain	Parbat	Páhár H. K.	Yedadhyu	Par'bat
Mouth	Birgyád. Birgyang	Múkha H.	Sung	Múkha
Musquito	Caret	Pokha	Polorinaba	Mas
Name	Giji	Ná u K.	Min	Ná u. Ji
Night	Ing gai	Ráti K.	Mun	Ráti
Oil	Jing	Tel K.	Chhigu	Tela
Old man	Caret	Caret	Khéba	Budhá
Old woman	Jigel [Nogmwa	Caret	Khúgyu	Budhiyá
Ox kind [husk	Nwágwá. Nógo	Caret	Mekinba	,,
Paddy or rice in	Chhusum	Dhán H. K.	Mlasam	Jadhan
Plantain	Mochá [gya	Kela H. K.	Tatung ro	Kera
Ram	Bhanták. Gholo-	Caret	Ghyu kidaba	Baiganbhátá
Cleaned rice	Kádiyun	Caret	Mla	Chá ur
River	Gimmekoná	Khola K.	Umdakyu	Kholá
Road	Won	Báto (K.)	Ghyám	Rastá
Salt	Huk vi	Nún H. K.	Chacha	Nun
Sheep kind	Gholo	Caret	Ghyu	,,
Skin	Gitán	Chhála H.	Dhi	Chám
Sky	Lágá i	Sarga	Mu	Caret
Snake	Tou	Sápa H. K.	Puḍhi	Sápa
Son	Tala sáï	Chhorá K.	Jha	Tarang gan
Star	Ing gai	Tárá H. K.	Sar	,,
Stallion	Caret	Caret	Ta	,,
Sow	Hígimi. Yásagimi	Baigani harra	Tili moma [ni	Sugarni
Sun	Ing	Gháma H. K.	Ghán gni. Saughi-	Ra uda
Tiger	Dájá káüli	Bágha H. K.	Ná	Bágha
Tooth	Toho	Dáta H. K.	Gyo	Dáta
Tree	Ï	Rukha K.	Ghyung	Gáchh
Vegetable	Mál ghyák	Ság H.	Dhap	Ság pattá

English.	*Kusúnda.*	*Pákh'ya.*	*Thák'sya.*	*Thárn.*
Village	Láháng	Gá u H. K.	Hál	Ga won
Water	Táng	Páni H. K.	Kya	Páni
Woman	Ning dai	Baigini	Mrin	Meráru
Wheat	Gahun	Gahun H.	Karu	Gohun
Wife	Ningdaimyáhoa	Baig'ani	Mríuhmí	Jani
Yam	Byalougolandán	Caret	Hmau dau	Kanmul
I	Chi	Ma	Ghyáng	Hang
Thou	Nu [Gida	Ta	Gna	Tong
He. She. It	I si. It'. Tok'pya ?	U'kya	Chana. H'mi	Utu
We two. Dual	Tok'jhig'na	Caret	Ghyangsi	Hángdu
Ye two	Nók'jhig'na	Caret	Gnísi	Tongdu'
They two	Gidajhig'na	Caret	Hmi si	Unudu
We all. Plural	Chóbaki [ki	Caret	Ghyang cha	Hang log
Ye all	Nokibaki Togará-	Caret	Gna cha	Tusal
They all	Gidabaki	Caret	Hmichá	Usal
Mine. My	Chíyi	Mero K.	Ghyang ge	Caret
Thine. Thy	Níyí	Tero K.	Gná ye	Caret
His Hers. Its	Gidayí	Usai ko K.	Hmi ye	Caret
Ours. Dual	Tokjhignayí	Caret	Ghyang si ye	Hamarnu hye
Yours. Dual	Nokjhignayí	Caret	Gni si ye	Caret
Theirs. Dual	Gidajhignayi	Caret	Hmi si ye	Uduwonko
Ours. Plural	Takibakimida Chobakiyida	Caret	Ghyang cha ye	Hámlogkau
Yours. Plural	Nokibakiyida	Caret	Gna cha ye [ye ke	Taháraabako
Theirs. Plural	Gidabakiyida	Caret	Hmi cha ye. Hmi	Unakara
One	Goï sáng	Yek	Di	Yek
Two	Ghígna	Dúï	Gni	Dúï
Three	Dáha	Tin	Som	Tin
Four	Pinjáng	Chár	Bla	Chár
Five	Pagnangjáng	Pách	Gná	Páche
Six	Caret	Chha	Tu	Chha
Seven	Caret	Sát	Gnes	Sát
Eight	Caret	Áth	Bhre	Áth
Nine	Caret	Nau	Ku	Nau
Ten	Caret	Das	Chyu	Das
Twenty	Caret	Bis	Gniyu	Bis
Thirty	Caret	Tis H. K.	Sombu	Tis
Forty	Caret	Chális H.	Blibyu	Chalis
Fifty	Caret	Pachás	Gnasyu	Pachas
Hundred	Caret	Saya H.	Bhra	Sau
Of	Nata igin	Ko K.	Chaye	Keha
To. Dat. & Acc.	La i (K.)	La T.	Dhyári	Keráke
From	Jáng jai	Báto K.	Kyáche	Paidádekhalbat
By. Instrumental	Á i	Le K.	Kau	Le
With. Cum.	Tángche	Saga	Gnáyero	Saga
Without. Sine.	Káuthá i	Bholi	Árobhoja	Náhiho i
In	Tái	Beli	Hísono	Bákinahi
Now	Ipwaji	Yeso	Ghyángchye	Amai. Abhai
Then	Nhu	Caret	Khaghángchye	Nabhai. Tabhai
When ?	Ásahi	Caret	Tigni	Kabahu
To-day	Itwaji. Ipwaji	Ája (K.)	Námá	Aju
To-morrow	Gorak	Bhóli (K.)	Tila	Kálhi
Yesterday	Binágá	Híjo (K.)	Kemichuri	Byáhan
Here	Tau wa	Yétá (K.)	Kesichosi	Yehara
There	Isága	Uta (K.)	Khatáikhanti	Uhara
Where ?	Ánaka	Kóta (K.)	Tomi	Kánha

Hindi and Khas throughout.

Almost wholly Tibetan.

English.	*Kusúnda.*	*Pákh'ya.*	*Thák'sya.*	*Tháru.*
Above	Drasu ok	Hapra	Caret	Upara
Below	Tumái	Tala (K.)	Masi	Tare
Between	Gijhágda	Májha (K.)	Kung ri	Biche
Without. Outside	Bangjo	Báhira (K.)	Phelori	Bahera
Within	Wáha	Bhitra (K.)	Nhári	Bhitra
Far	Isinha	Táhi	Chari	Uhá
Near	Ista	Nesai	Nyese	Ihyá
Little	Dyoro	Yokai. Thokái	Chipri	Thoro
Much	Mang gni	Mauti	Dhan há	Bahut
How much ?	Ásina	Kati (K.)	Kang nya	Ketaná
As	Natiya	Caret	Khajibá	Jaisan
So	Nápawai	Caret	Khapribá khaju	Wunaisan
How ?	Natuwan	Caret	Khajulába	Caret
Thus	Tantan	Caret	Ho alába	Hán
Yes	Áyábakiho	Hóhó K.	Hin	Náhibá
No	Áyewá	Ásin	Aí	Náhi
Not. Prohibitive	Hyá	Na H. K.	Kino	Rahare
And	Caret	Ra	Bikigang	Ká
Or	Caret	Caret	Howochuchhyáng	Ihe
This	Tá i. Ta	Yehi. Yó H.	Pa áng kyungpa	„
That	Issi. It	Wóhi. U'. H.	Cha. Khapami	U'
Which, Who } Jon	Hágim'ya hák, vel hag-it	Jimanchha	Khanángpémhi	Kunmanai
Which, Who } Ton	Nataim'ya hágit vel hak	Jaunamanchha K.	Khajupémhi	Umanai
Who, Which } Kon	Nátát	Kaunamanchha K.	Tá	Kaunmanai
What ?	Nátáng	Kyá H.	Khajupero	Ká
Any thing	Nataum'ya hágit	Kehi bastu H.	Khajang pemhi	Kunbastu
Any body	Nataim'ya hak vel hyák.	Kohimánchhá H.	Sabadhyángpá	Konamanai
Good	Waiyaki	Báhiya. Niko(K.)	Ásbá	Niman. Badhai
Bad	Ka ingbarai	Ghatiyá. Behor	Na ásba	Tniman
Cold	Kháng go.	Chiso (K.)	Sim	Thandá
Hot	Bhrok	Táto (K.)	Lhap	Chuhan
Raw	Ben	Kácho (K.)	Átehebá	Kácha
Ripe	Pakog	Páko (K.)	Pyáhejiba	Pákal
Sweet	Áhál	Guliyo (K.)	Koghibá	Mithá
Acrid, pungent (as red pepper, &c.)	Byá	Piro (K.)	Swobá	Tin
Bitter	Kátuk	Tito (K.)	Kambá	Tin
Sour	Dam tan	Ámilo (K.)	Kimbá [hepá	Khattá
Handsome	Waiyaimyá hák	Rámro (K.)	Bastu. Mhikya-	Besmanai
Ugly	Áingbarai	Caret	Mhi ákyáhopá	Bauramani
Straight	Caret	Tersai (K.)	Tananphirphai	Sojh
Crooked	Wáng káng	Báng go (K.)	Yeba	Tat
Black	Páng sing	Kálo (K.)	Maláng	Kariyá
White	Ásai	Séto (K.)	Tarpa	Ujar
Red	Bán ubá.	Ráto (K.)	Walá	Lál
Green	Hariyo K.	Hariyo (K.)	Phin	Hariyer
Long	Hwang gai	Lámo (K.)	Hrimba	Lambá
Short	Poktok	Chhoto (K.)	Rimba	Chhot
Tall } man.	Phiyong	Ago (K.)	Bauchhenba	Uchcha
Short } man.	Poktok	Hocho (K.)	Putulu	Nícha
Small	Hungkoi	Sánu (K.)	Chyángba	Chhot
Great	Wogonrái	Thúlo (K.)	Théba	Mot

English.	*Kusúnda.*	*Pak'hyá.*	*Thák'sya.*	*Tháru.*
Round	Mang gni	Bátulo (K.)	Ghighírba	Gola
Square	Chárapáte K.	Chárapálo	Bhilirchhówa	Chárakunabate
Round	Dallo K.	Dallo (K.)	Bhumríba	Dhela
Flat	Chyángkáng	Pátalo (K.)	Pabapilhe	Pánarabangpánang
Fat	Biji	Móto (K.)	Dhum'wa	Mot
Thin	Gharáu	Háriyáko	Jyaípa	Dabar
Weariness	Balangba	Galelágyo	Bhalápji	Thákali
Thirst	Táp yáu	Pámitís H. K.	Kejuphiji	Pipás
Hunger	Idáng	Bhok lágyo K.	Phothanji	Bhok
Eat	Ám	Gáu. Khúwa H. K.	Lhila	Khai
Drink	Táng gonong	Piu H. K.	Pi u	Piyal. Piláyaba
Sleep	Iptu (? Causal)	Saira H.	Nhuko	Sutali
Wake	Blengwoto	Utha H.	Réto	Uthali. Jagal
Do	Au ó. Au wo	Harihal	Lhaú. Lau	Kara
Do not	Anibil	Janahára	Thahú	Nakara
Laugh	Nakyába	Hás H.	Gnéto	Káhasal
Weep	Jhámа ó	Sanchha	Táko	Káro ól
Be silent	Abágánebin	Chochira	Lhemthalo	Chupraho
Speak	Pwáktoba	Caret	Tyáto	Bolai
Do not speak	Anoktabin	Janabol	Tha tyáto	Nabol
Come	Agga	Áija K.	Khau	Áwá. Yánha
Go	Dá	Báija	Hero	Jájá
Remain standing	Loengwóto	Pakhanataba	Pranhogatu	Khaḍárahawai
Stand up, get up	Loengwóto	Utha (K.)	Gnajurpa	Khaḍáhó
Sit down	Bhingwóto	Basa (K.)	Túpa	Baith
Walk or move	Aban	Hat H.	Hero	Chal
Run	Gorgowóto	Phalála	Gninahero.	Dhába
Give	Ái	Deu (K.)	Pino	Dada
Take	Má	La (K.)	Bhakáu	Lala
Strike	Pungbógo	Kût (K.)	Táü. Thopáti	Már. Maráu
Kill, by cutting, cut down	Puwágo	Kát (K.)	Thagothápáti	„
Kill, any how, i. e destroy	Wagdágo	Márideú (K.)	„	Már
Kill, with stone or other missile	Yuphwágo	Hán (K.)	Prino	Kát
Bring	Ái	Lyályá (K.)	Bhakau	Lyáre. Léare
Take away	Wá	Láljá (K.)	Bhoro	Léjáre
Lift up	Yúlinggwajo	Bok (K.)	Thíthónko	Uthá o. Lád
Put down	Gyag'mo	Bísa	Thano	Rákhare
Hear	Mang'bo	Suna (K.)	Nagníno	Suna
Understand	Caret	Bujha	Ghau	Bujhare
Tell or relate	Wongdágo	Kaha (K.)	Bhígho	Kahare
I beat	Ki-pomatanha-u	Man kut'chhu*	Gnajai toba	Hama marilá
We two beat. Dual	Tokjhignai pomatanhaï	Hamidwi kut'chau	Gnigni tobaká	Hamadunu marilá
We all beat. Pl.	Tokkhágyai pomatanhaï	Hamiharu kut'chaun	Gnignichai tobomu	Raura márila
Thou beatest	Nupomatawa	Ta kut'chhas	Chyáng chaitobá	Raura márila

* The rest of this column is pure Khas or Parbatya, as also all the other words having the "K" subjoined. The corrupt Urdu or Hindi of Tháru is too palpable and incessant to need a mark. The Tháru tongue like the Kocch and so many others of the Tarai, from Hardwar to Assam, is fast merging in the proximate Arian tongues; and so also the Hill dialects into Khas.

English.	*Kusúnda.*	*Pak'hyá.*	*Thák'sya.*	*Thâru.*
Ye two beat. Dual	Nokjhegna pomatawa [wa	Timidwi kut'chhau [hau	Namágni tobamu	Rauradunu márila [márila
Ye all beat. Pl.	Nokkhag pomata-	Timiharu kut'ch-	Namacha tobamu	Raurapangchau-
He, she, it beats	Gida pomatawa	U kut'chha	The tobamu	U márala
They two beat. Dl.	Gidajhigna pomatawa [wa	Undwi kut'chha	Thamagni tobamu	Udunu márila
They all beat. Pl.	Gidbki pomata-	Unharu kut'chhan	Hmichaka tobamu	Unaloga márala
I am beaten [Dual	Tangda pungmatabahini [bai	Malai kut'chha [chha	Gnazir tobamu	Hamake márila [rila
We two are beaten.	Tokjhigai pomata-	Hámidwilai kut'-	Gnigni tobamu	Hamdunuké má-
We all are beaten. Plural	Tokhkádai pomatabai	Hámiharulai kut'chha	Gniri tobamu	Hámálogake márila
He, &c. is beaten.	Gidodánigidai. pungmataba	Uslai kuttachha	Caret	Woke márila
They two are beaten. Dual	Gidajhignaigi- pungmataba	Unaidwilai kuttachha	Caret	Woduke márila
They are all beaten. Plural	Gidakhaigi pungmataba	Unharulai kut'chha	Caret	Wologanake márila

mparative Vocabulary of the several Languages (dialects) of the celebrated people called Kirântis, now occupying the Eastern-most province of the kingdom of Népál, or the basin of the river Arun, which province is named after them Kirânt. By B. H. Hodgson Esq., *B. C. S.*

English.	*Rodong, or Chámling.*	*Rúngchhén-búng.*	*Chhingtángya.*	*Náchheréng.*	*Wáling.*	*Yákha.*	*Chourásya.*	*Kúlung'ya.*	*Thulung'gya.*
	Hyú	Heek. Hak	Him' ma	Hí. Ĭ.	Him'ma. Hak	Hig'wa phák Hik' gwa	Phúrim	Hik' pa	Iú
aranth	Lúng'ma	Chhénna. U chen na	Chhénna	Chípa nám	Chhénná	Magarni	Gósaráni	Lúng kúpa	Lúng kúpa
t	Chíkarépa	Sáchakáwa. Chikyang	Póngkharók	Chhámpalyú	Chhíkyáng	Khelek. Khelem	Po urung'ma Pwórum'ma	Khá lem	Khálim
m, see hand	Chhu	Chhuk. Uchho.	Muk	Hu u. Hu hú	Chhuk	Muk	Lá	Húh' u	Lwá
ow	Bhé [Wádám	Bhyé. Bhé Ú bhé	Phésúk. Phesu k	Bé í	Bé. Bhé	Pí si k'. Pí shi k'	Bló	Béï. Bé í	Né plé
rley	Yéwa dám.	Tongchhóng	Jáma. Jáwa	Chhóng kha	Tóng chhóng	Chí-cháma	Bóg já	Jéú. Chhóngki	Jéú. Jé ú
d-kind	Wása	Chhóngwa	Wása	Chhó wa	Chhong wá	Núa and Nwawachi	Chak bwa	Chhówa	Chakpu
d male	Wása ópa	O'pa chhóngwa	Ưpa wása	Ưpa chhó wa	Ápo chhongwá	Ĭba chhanowachi	Ápo chák bwa	Vápchhó wa	Grok'pu-Chak' pu or Upap chakpu.
rd female	Wása óma	O'ma chhóngwa	Ưma wása	Ưma chhó wa	Áma chhongwá	Ĭma chhanowachi	Ábomo chakbwa	Vámchhó-wa	Umam' chakpu
tch	Khlíma	O'ma kochuwa	Ưma kochuwa	Ưma haaga	Áma kwachuwa	Ĭma chha kwachúmá [wa	Chálinima. A bomócháli	Ưmakhéba	Un-ám khlé ba
ood	Hí. Háa	Há. Héu	Há li	Hí	Hí. Há	Hel'la. Hel'	Ư sú	Hí	Sísí
par	Opa bó. Húípa. Hwí pa	O'pa-bá. Yútpabá	Ưpa phá k	U pa bóó	Béphá. Apokhong	Ipáchha phák	Ápo pá	Léma	Ưpa bo
oat [Bha	Náwa	Náwa	Dóng' ga	Dúng' ga	Dúng' ga	Dúng' ga	Ghág	Bo kho	Dúng' ga
oiled rice o	Rón	Kok. Koo.	Kok	Já. Rák já	Kok	Cháma	Hépa	Iá	Jám
one, see hor	Sar'wa. Sárúwa	Sá yuba. Yúwá. Pí yuwa, cow's bone	Sárúk wa	Tu prú. Tup ru	Sar'wa Sai wa	Séng khok'wa. Seng khog' we	Rúsú	Iaprí. Tup rí	Sasar
oy	Soren chhachhá	Dú wachhachhá	Yém bichhá	Wáchchha chhá	Dú wachhá	Wéngpha pícha. Wengpha pi cha	Uchobéba	Wáhchhachhá	Wes' chwechwéchwé

English.	*Rodong, or Chámling.*	*Rúngchhénbúng.*	*Chhingtángya.*	*Náchheréng.*
Buffalo-kind	Báhira. Maisi	Sángwa	Sángwa	Méisá. Meis
Buffalo male	Um'pa maisi	O'pa sáng'wa	Upa sángwa	Um'pa méisá
Buffalo female	Umma maisi	O'ma Sáng'wa	Umma Sángwa	Um'ma méisá
Bull	Pí umpa	O'pa pít	Upapít	Wáchchha piya. Um'pa péya
Calf-kind	Pí úmchhá	Pitchhá. Pih'chhá	Pitchil	Pími úmchhá
Calf male	Pí úmpa úmchhá	O'pa pitchhá	Upa pitchilé	Pími úmpachhá
Calf female	Pí úmma úmchhá	O'ma pitchhá	Umma pitchilé	Pími úmmachhá
Cat-kind	Bé ra	Sur'ma. Minima	Púsú	Manima
Cat male	Bé rapá	O'pá minima	Upá púsú	Umpá manima
Cat female	Bé ramá	O'ma minima	Umma púsú	Umma manima
Child	Chhách. Yáya-chhá	Chhá chi. Mana-chhá	Chh'a che	Chhámú wa
Cow	Pyu pa. Pí	Pit. Pih'	Pit	Pí
Cock	Wápá	Wápá. O'pa wápá	Rang gába	Wápá
Crow	Oúwá	Ká ga. Kah' wá. Gah' wá	Ghák wa	Gógok pá
Daughter	Márchha chhá. Chhachha ma	Méch'chha chhá-chhá. U mech'-chha chhá chhá	Méch'chha chha	Mímchha chbá
Day	Kholé	Ukholén	Nám	Mlépa
Dog-kind	Khlí.	Kóchúwá	Kochúwá	Haga
Dog male	Khlípá	O'pá kóchúwá	Upa kochúwá	Haa ga
Ear [whole	Nápro	Nába [ma	Nárék	Nábá
Earth, little. Earth,	Bókhá	Bákhá. Henkha-	Khám	Baha
Egg	Dai. Da i	U díng. Wá dín	U thín	Dí i
Elephant-kind	Hátti	Háti	Háti	Háthi
Elephant male	Umpa hátti	O'pa háti	Upá háti	Umpa háthi
Elephant female	Umma hátti	O'ma háti	Um'ma háti	Um'ma háthi
Ewe	Umma bhéḍa	O'ma bhéḍá	Um'ma bhéḍá	Um'ma lúsa
Eye	Michak	Mak. Maák	Mak	Mak'sa
Face	Ugnálúng	Gnálúng	Gnálúng	Nábwa
Father	Um' pa	Eu pa. Pá. Wa-pa. O'pa	Upá	Upa
Fire	Mi	Mi	Mi	Mi
Fish	Gnása	Gná	Gnása	Gná
Flower	Búngná	Búngwaí	Phúng	Bú
Fowl-kind	Wá	Wá	Wá	Wá
Foot	Phílú	Langtemma. Wu-khuro. U khuro	Láng	La. Lóphóma
Fruit	Báda. Yóda	O síwa [chhá	Síwa	Súsá
Girl	Chhámárchhá	Mechchhachhá-	Máchchhachhá	Mim chhá chhá
Grain	Chá	Chámá	Kwak. Kok	Chán'ma
Goat-kind	Chhóng gara	Chhéng gara	Méndíba	Chhángara
Goat male	Umpa chhong ga-ra [ra	O'pa chhén gara	Upá méndíba	Umpa chhángara
Goat female	Umma chhong ga-	O'ma chéng gara	Umma méndíba	Umma chhángara
Hair	Mus'ya. Twóng. (Ta = head)	Má a	Tang'phúkwa. (Tang = head)	Taa sám. (Taa = head)
Hand, see arm	Chhúku phéma, arm flat	Chhúkhu phéma, arm flat	Múk	Húú

Wáling.	*Yákha.*	*Chouras'ya.*	*Kulúng'ya.*	*Thulung'gya.*
Sáng wa	Sán wa	Bé í so	Mési	Mési
Apa sáng wa	Ípa chha sán wa	Apo be i so	Mési mipa. Um'-pa mési [si mima	Upap mési
Ama sáng wa	Íma chha sán wa	Abomó be i so	Um'ma mési. Mé-	Umám mési
Caret	Ípachha pík	Apo bíya	Umpapí. Pímpa	Bénwa
Caret	Pikaïchwe	Bíya nunu	Pim'chha	*Gaíkam uchwe
	Pikaïchwe ípachhá [chhá	Apo bíya nunu	Umpa pim'chhá	Gáikam úpap-uchwe [uchwe
	Pikaïchwe íma-	Abomo bíya nunu	Um'ma pim'chhá	Gáikam úmam-
Mú nimá	Púsúma	Bir'mo	Biráli	Bir'má. Ubirma
Apa múnimá	Ípáchhá púsúma	Apo bir'mo	Umpa biráli	Upáp bir'má
Ama múnimá	Ímáchhá púsúma	Abómó bir'mo	Um'ma biráli	Umám bir'ma
Chháchi	Píchhá	Béba	Nukcha. Chhá-chháma man-chhámá. Cha s-cha [pí	Chwé chwé. Má-lochém chwé-chwé, human young
Gái	Ímachha pik	Bía. Bíya. Amo- [bía	Pí im'ma. Umma-	Gai
Wápá	Ípáchhá wa	Bó gnápa	Wápá	Grókpupó
Gówá	Áh' gwá. A g wa	Gág bó	Gágáh' pó	Gápwa. Gá pó
Máchhá	Chíyá méch chhá	Ípbe	Mimchháchhá	Más chwé chwé. Mis' che chwé-chwé
Wo kholé. Náin- [díya	Leh' ni	Duk'so	Lépá	Némphú
Kótima. Kochuwá	Kóchúma	Cháli [chali	Khé b [Khémí pa	Khlébá
Apa kochuwá	Ípachhá kochuma	Chali gnápo. Apo-	Um'pa khebá,	Upáp khlébá
Náphák	Náphák	Dóbú	Nóbwa, Nó bo	Nókphla
Pákhá	Khám	Káṇksi	Bóhó	Kwá
Dim	Iu. Wá ín. (Wá [= fowl)	Bábáng'gya. (Bá [= fowl)	Umdí. Wádí. Di (Wá = fowl)	Dí í
Háthi	Hátti	Hátti	Hátti	Háti
Apa háthi	Ípáchhá hátti	Apo hátti	Háttimpá	Upáp háti
Áma háthi	Ímáchha hátti	Abómó hátti	Háttim'má	Umám háti
Áma bhéḍa	Ímáchhá bhénda	Abómó† bhéḍá	Bhéṭim' má	Umám bheḍa
Mak	Mik	Bisi	Muk'si‡	Mik'si
Gná láng	Náchik	Kúli	Gnóbwa, Gnó bo	Kal
Ápá. Pápá	Ípa. Pá	Apó	Pá. Um'pá	Páp. U páp
Mi	Mi	Mi	Mi	Mú
Gná	Gnása	Gnóso	Gná	Gnó. Sá. Swé
Búng	Phúng	Phúri	Búng	Búng'ma
Wá	Wá	Bó	Wá	Pó
Lángkutém	Lang tápi	Lósu	Lóng	Phémkhél
Sángsí wa	Ichá	Ching'chi	Sísí	Sísi
Máchhá	Méchchhá pichhá	Bicho bébá	Mimchháchhá	Musche chwé
Chá	Chabák	Jáma	Chásúm	Má
Bákara	Méngthibak	Sángara	Chháng gara	Chhwánra
Apa bákara	Ípachhá méngthi- bak [bák	Apo sángara	Chháng garámpa	Upáp chhwánra
Áma bákara	Ímáchhá méngthi-	Abomó sángara	Chháng garámma	Umám chhwánra
Táng múwa. (Tang = head)	Tángpháng' wa. (Tang = head)	Sóm	Múi. Tósúm. (To = head)	Sém. Swém
Chhúk	Múktápi	Lá	Húh'pháma	Lwáblém

* Gaika borrowed. Definitive 'm annexed.

English.	*Rodong, or Chámling.*	*Rúngchhénbúng.*	*Chhingtángya.*	*Náchheréng.*
Head	Táklo. Tak ḷo	Táng. Eu táug	Táng	Ták lo
Hen	Wáma	O'ma wáma [wild	Uma wa	Wámá
Hog-kind	Bó [tong	Bá. Yángbá, the	Phak	Bó ó
Horn	Rúng. Tong. Um-	Usang'ga	Sing' ga	Ta a
Horse-kind	Ghóḍá	Ghóḍá	Ghóḍá	Ghóḍá
House	Khim	Khim	Khim	Khim
Husband	Átúmi. Túmi	Caret	Pápho. Átúmi	Umtópo
Iron	Phalám	Phalám	Bánchhúwa	Phalám
Kid-kind	Chhong gara	Chhén garachha	Méndíbachhá	Chhángara umchhá
Kid male	Chhong gara um-páchhá	Chhén gara ópa-chha	Upa méndibachhá	Chhángara umpa-chhá
Kid female	Chhong gara um-máchhá	Chhéng gara óma-chha	Uma méndibachhá	Chhángara umma-chhá
Lamb-kind	Bhédi umchhá	Bhéḍa umchhá	Bhédichha	Lúsa umchhá
Lamb male	Bhédi umpachha	Bhéda opa chha	Bhédi upa chha	Lúsa umpa chhá
Lamb female	Bhedi ummachha	Bhéda oma chha	Bhédi uma chha	Lúsa umma chhá
Leaf	Lábo	Ubáwa euchha	Laphówa	Sam. Saa ma
Leg	Phílú	Láng	Láng	Ló ó
Light	Námchha. Kha wí-ya	Uláwachhámi,sam.	Khálámthá	Wújyáló
Maize	Makai	Makai	Makai	Bapsú sá
Man-kind	Mína	Mana. Ma a na	Mápmi. Mah'mi	Mína. Min
Man, the male	Soronchha. Soron-chhá mina	Dú wachhá. Mech-chha-chha, wo-mau chha homo	Pá	Wáchechhá
Mare	Umaghóḍa	O'ma ghóḍa	Umma ghóḍá	Umma ghóḍá
Millet, (Kangani)	Phéro	Phésa	Phésa	Písa
Millet, (Kódó)	Char'ma	Sámpícha	Sambok	Chérchá
Monkey-kind	Tóng bhú. Nó i	Héláwa	Héláwa	Pópa
Monkey, the male	Umpa tong bhú	O'pá héláwa	Upa héláwa	Umpa popa
Monkey, the female	Umma tong bhú	O'ma héláwa	Umma héláwa	Umma popa
Moon	Ládípa	Ládíma	Láthíba	Láníma
Mother	Ma. U ma	Má. O 'ma	Má. Uma	Má. U m-ma
Mountain	Dánda	Bhar	Bour	Dánda
Mouth	Dyó	Dó	Thurum	Gnócho
Musquito	Túngkáma	Lámkhútya	Twang gyómma	Súpyál
Name	Nang	Nang	Nang	Na
Night	Khósai	Ukhákhwái. Ukhá-ko	Ukha khúit. Ukha-khuit	Umsyápa
Oil	Béli	Áh'wa	Kíya	Tél
Old man	Páchha. Páchha-kówa [kóma	Búdhá khókpa	Búdhapá	Passou
Old woman	Máchha. Machha-	Bhúdá khókma	Búdhimá	Massou
Ox-kind	Pí	Pit	Pik	Péh' ya
Paddy	Róng	Chá	Cháya	Rá á
Plantain	Gnósí*	Gnak'sí	Gnáklásí	Li gnáksi
Ram	Umpa bhéḍa	O'pa bhéḍa	Upa bhéḍa	Umpa lúsa
Rice or Choul	Cháráng	Cháyóng	Chá srák	Síra

* In all the words sí vel chi vel cha is the generic sign for all fruits. So also cha vel já, = all grains, in the words for barley and rice: ma in Thul.

Wáling.	*Yákha.*	*Chouras'ya.*	*Kulúng'ya.*	*Thulungg'ya.*
Táng	Tukh rúk. Tukhu-rúk Tú khrúk	Phútiri	Tóng	Búi [Pó. Umam po
Wáma	I'máchha wá	Ábomó bo	Wáma	Pwa. U'mam pwa
Bók. Phá. Khong	Phák	Pá	Bó o	Bwá. Bo
Khú úng táng. Atam'mi khak	Itáng'	Róso	U'mpítta. Pítta	Ráng. Um ráng
Ghóḍá	O'n	Ghóḍá	Ghóḍa	Ghoḍá
Khim	Páng	Kúḍú	Khim	Ném
Apa sang'	Wémphá	O' chó. Wó cho	Umtúppo. Túppo	Kha
Phalám	Chek chi	Phalám	Sél	Sél [we
Bákarachháchi	Menthúbaichchya	Sángár núnu	Chhángarachhá	Chhwárakam uch-
Ápa bákarachhá	Ipáchhá menthúbaichchya	Sángár táwa	Chhángarachhá-úmpá	Chhwárakam, uch-we úpah
Ama bákarachhá	Imachhá menthúbaichchya	Sángár tábe	Chhángarachhá-úmma	Chhwárakam uch-we úmam
Bhéḍáchhachi	Bheḍaïchwe	Bhéḍa núnu	Bhedamchhá	Bhéḍáchwé*
Apo bhedachhachi	Ipachha bhedaïchwe [chwe	Bheda táwa	Bhedumpachhá	Bhedupapchwé
Amo bherachhachi	Imachha bhedaï-	Bheda tábe	Bhedummachhá	Bhedumamchwé
Sung'phák. Bá	Súm phák	Sáphá. Móli	Siba. Lá. Um bóa	Sé blám
Láng	Láng	Lósu	Lóng	Khel
Wújyáló. Khádái	Wop'na	Dwám somo. U'jyálo	Kodáta. Námchhowa. Miwal'ma	Hwah'wáya, sam.
Makai	Makaï	Groboma	Makai	Mákái
Mana. Mína	Yáp'mi	Múyo	Mis	Míchyu
Adú wa. Dúwa	Wengpha	O'cho	Wáchchhá	Wáschwe
Á'ma ghoḍa	Imáchha won	Á'bomo ghoḍá	Ghodám ma	Umam ghoda
Phésa	Péya	Já	Pési	Sar
Sámpícha	Páng gyá	Charjá	Lísí	Lísér
Héláwa	Pubáng	Pokú	Púpwa	Núk'syu
Apa héláwa	Ipáchha pubáng	Ápo pokú	Púpwampá	Núk'syu upáp
Ama héláwa	Imáchha pubáng	Á'bomo pokú	Púpwammá	Núk'syu umám
Ládíma	Lá	Twasyál. To syal	Lá	Khlyé, Khlé
Á'má	I'ma. Má	Á'mo	Má. Ummá	Mám. Umam
Dáṇda	Kwángu	Kwáma	Tám' hím	Bro
Twó. Do	Múláphu	Dúli	Gno	Si
Súpyál. Tokli.	Thokthoki láng	Gang'gayúmo	Kwongtholi	Mas
Nang	Ning	Di	Ning	Nang
Umkhakhú. Akhakhwí	Séh' ní	Domsá. Dwángpríme. Dompaíme	Sépa	Dum'ma. Dungma
Á'h' wá	Kíwa	Tilyám	Khilám	Tel
Pásang	I'háp' pa	Gné wá	Manchám wáchhá [chhá	Gná ú
Másang	I'háp' ma	Gné bé	Manchám mim-	Gnámi
Caret	Pik	Bíya	Pí	Caret
Káya	Chám	Gárjá	Rá [gnoksi	Résépma, grain
Gnáksí	Chémokla	Bál chí	Li gnoksí. Li-	Lég noksí
Ápa bhéḍa	Ipáchhabhéda	Ápo bhéḍa	Bhédámpá, (for Bheḍa ampa)	U'páp. Bhéḍa
Cháyáng	Yáméchchhu	Sérá	Sérí	Soar'. So ar'

* In Kid we have the full form with genitive sign and definitive prefix. Here we have both dropt. With them the terms would run bheda-kam-uchi (for um) chwe or bhera-kar-u-chwe. But genitive ka is borrowed, and kam is = ka-um.

English.	*Rodong, or Chámling.*	*Rúngchhénbúng.*	*Chhingtángya.*	*Náchheréng.*
River	Wá hwái	Hongkú	Wáhóh' ma	Húng kwáma. [Hung kóma
Road	Lám	Lám	Lámbo	Lám
Salt	Rúm	Yúm	Yúm	Ram
Sheep-kind	Bhéḍá	Bhéḍa	Bhéḍa	Lúsa
Skin	Húlépá	*Hokwa. Uhok'wa. Sa hok wa	Sáhok' wa	Sá hok
Sky	Nám	Námchok	Námchhuru	Nám chho
Snake	Púchho	Púchhám	Púchhá	Pu ú
Soil	Bóh'khá	Héngkháma	Tháng'pu	Thámpu
Son	Soróncha chhá	Dúwachháchhá	Chhái [Chok choi	Wach'chha chhá
Star	Pitipya. Pitappa	Sáng gén	Chok chong i.	Sangger'wa
Stallion	Umpa ghoḍá	O'pa ghoḍa	Upa ghoḍa	Umpa ghoḍa
Stone	Lúng'to	Lúng'ta	Lúnggwak' wa	Lú ú
Sow	O'ma bó	O'ma bá	Umma phák	Um'ma boö
Sun. Sun shine	Námlíya. Nam	Nám	Nám	Nám
Tiger	Chábhá	Kíwa	Kíbha	Dhing'trá
Tooth	King	Kang	Kéng	Ka a
Tree	Song púwa	Sang'táng [khám	Sang'	Sá á
Vegetables	Ság	Limkhám chok-	Ságá	Sánkhai lúnkhai
Village	Túng'má	Téng	Tén	Tyál
Water	Wá	Cháwá	Chú wá	Ka a wá
Wife	Mai. U mai	Mechchhachha	Méchchhá	Yúh' úṭ
Wheat	Chhong. Námbo	Núh'chhong	Jáwá	Docher
Wood	Sang	Sáng	Sáng	Sou
Woman	Márchha	Méchchhachhá	Máché	Mim'chha
Yam	Sóki	Sáki [chhá	Khí sú wa	Khí yok'sa
Young man	Wálalichhá	Phánta. Phántá-	Wánchábáng	Solo
Young woman	Klámáichhá [ka	Káméchhá	Káméchchhá	Solome
I	Kágná. Ká. Ing	Ungka. Anka. Ang	Aká	Kágná. Ká
Thou	Khana	Khana	Haná	Aná
He, She, it. Dual	Khú. Tyako. Hyako	Oko. Moko. Euyako. Euyauko	Mogo. Mogwa. Yoko. Mogo	Manka. Yáko
We. Plural inclusive [clusive	Kai. Ka í	Ungkan	Kánaná. Kanga na	Ka i
We. Plural ex-	Kai. Ka	Ungkanka	..	Kai ka
Ye. Plural	Khaini. Khana i	Khánánin. Khana na	Hánánina	Ánnimo. A na i
They. Plural	Hay i. Khu chu. Khu-i Tya i	Moko‡	Yo go. Yo gwana. Mo go na	Yák mowa. Yako i. Ma ka i
Mine, disjunct.	Ang' ma	Ang'ko	Ákwa. A ko o	Angmi
My. conjunct.	Á. Ang	Ang	Á [kwa	..
Thine	Khámo	§Ámko	Hana. Hánáyak-	An mi. Ámmi
Thy	Ká	Am	..	Am
His, Her's, Its, disjunct [conj.	Khúmo	Moso. Ya u so	Mogwasékkwa	Yákmi. Mankami
His, Her, Its,	U. O'. Um. Ung	O. Eu	U	U. Um

* Yu-a or sa-yúa, bone; sa or u-sa, flesh; hokwa or sa-hokwa, skin; heu or sa-heu blood, and also u-heu; hokwa, skin; sa-hokwa, skin; sing-hokwa, tree-skin or bark.

† Yú is wife in Lepcha and in Tamil. U, ind. art. = 'a' prefix in those tongues, a-yu, and ta-yu, tayu = u-yu or yú-ú.

‡ 3rd pronoun like nouns, transfers sign to adjective or verb.

§ Dual ungka-cheua, exclusive ungka-chi, inclusive Khana-chi, Moko-chi, Oko-chi, Euyakochi.

Wáling.	*Yákha.*	*Chouras'ya.*	*Kulúng'ya.*	*Thulungg'ya.*
Hong' ma	Hong'ma	Gúlo	Yo wá	Kúrkú
Lám	Lám' bu	Lám	Lám	Lám
Yúm	Yúm	Yok'si	Gúm	Yo
Bheḍa	Bheda	Bhéḍa	Bhédá	Pheḍa
Sáhok	Sáho wárik	Kwak' te. Kok' te	Soko wári [Neto	Kwok'si. Kok'si.* Kok'te
Sag'ra [chham	Táng khyáng	Dwám	Chhúburi. Netwa.	Dwámu
Puchháp. Pú-	Púchák	Bísa	Pu	Phú chyú
Bákhá	Khámbema	Kák'si	Thám'pu	Kwá [chhwe chwe
Chhá. Dúwachhá	Chyá. Chwe	Táwa	Wáchha chhá	Chye. Chwe. Was-
Sang gen ma	Chokchígi	Soru	Súnguer	Swar
Apa ghodá	Ipáchha won	Ápo ghoḍá	Gho dám'pa	Upápghoḍa
Lúng-ták [má	Lúngkhok' wa	Lúng	Lúng [ma	Lúng [am boö
Amopha. Khong-	Imáchhá phák	Ábomo pá	Bwam má. Bo o-	Umám bwá. Um-
Námchho wa. Sun shine	Nám	Dwám	Nám	Nepsúng. Nem, sun shine
Dhí na rá. Dhínra	K'iba	Gúpso	Nári	Gúpsyú
Kang	Há. Háchi [tháp	Gúm'so	Káng	Lyú
Sang u	Ing tháp. Sing gai-	Sing	Thonám	Dhak'sa
Ságá	Phíyakhyú	Silim	Kháiyu	Ság
Teng	Ten	Del	Tel	Del
Chá wá	Máng chúwa	Ká-kú	Káú	Kú
Ámasang'	Mechchhá	Bícho	Yuh' u†	‡Kha
Cháyong' chhong	Chíchá ma	Caret	Docher	Jepser
Sang	Caret	Sing	Sing	Sáng
Adúmá	Mecchha yapmi	Bíchomúyo	Mim'chhá	Wo-chyú
Sá khí. Yák	Khe. Súchígwa	Rang'jabí	Khe	Balak'pu
Phang' ta	Wengchá	Sálá cho	Solo	Swálachwé
Kámechhá	Kime	Sálame	Solome	Swálame
Ingka. Angka	Ká	Unggú	Kogná	Go
Háná. Khana	Ing'khi. 'N khi	Gnome. Unu	Ána	Gána
Aya. Hayako. Moko	Khena. Yona. I'-khi. Yona. Mo-na. Tona	Time. Yome. Ya-me	Náko. Múko. Ne-tako	Hána
Iká. Uká. Ing kai. Ingka ni	Kani	Ung gúticha	Kekáá, Ko i. Ko-ni	Gokú
Kong kaika	Kani. Ka	..	..	Goi
Hánani	Inkhi ni. Ning-khi. 'Nkhi ni	Gnometicha. Unu	Áni. Ana i	Gáni
Haya ni. Hayák Mokoni	Ichi khi. 1'khi ni. Yona ni	Tometicha	Nákoni	Hanommim. Ha-nom nu
Ángpik	Ága	Aleme	..	Áná
Á	..	Á	..	Á
Ampik	I'n gá	Ileme	Ámmi	Yemá
Am	..	..	..	I' [kam
Hayek pik	I'gá. Yona ga, &c.	Gnemeleme	Nakwami	O'kam. Hanom-
..	I'.	..	Wa	U

* Si = sa; kok, hok = crude; swé su-e = flesh.

† Yú is wife in Lepcha and in Tamil. U, ind. art. = 'a' prefix in those tongues, a-yu and ta-yu, tayu = u-yu or yú-ú.

‡ Kha = husband *or* wife. Husband *and* wife = Khábung'.

Chi, D. Nin, Pl. Yu = long, heut = perforated, bop = rounds, phem = flats.

English.	*Rodong, or Chámling.*	*Rúngchhénbúng.*	*Chhingtángya.*	*Náchherény.*
Our's	Imo. Áimo	Áinkwa	Káuúguáikkwá	Wokimi.
Our				Woki
Your's	Khaimo	Áimno	Hániyakkwá	Amnimowá
Your	[Khu i mo			
Their's	Khúmo.	Myáúcho	Húngcheikkwa	Yákmomi
Their				
One*	Aúra. Itto	Eukhha. Eukpop †Eukta, unchanged	Thítta	I'bhou
Two	Hákara	Heuwang. Heu sa. Heu wa pop‡	Híchche	Nísbhou
Three	Súm'ra	Súm ya. Sumpang. Sum kapop	Súmche	Súk'bhou
Four	Lyúra	Láya. Lawang. La wa pop		Lik'bhou
Five	Gnára	Gnáya. Gnawang. Gna ka pop		Gnák'bhou
Six	Túk'kara	Túk-ya. Tuk wang. Tuk ka pop		
Seven	Raíkara	Bhángya. Bhangwang. Bhangka pop		
Eight	Bhok'kara	Reya. Re wang. Reka pop		
Nine	Kípura	Pháng ya wang pop		
Ten	Lípura	Kípu. Kip. Dheuk pang. Dheukka pop		
Twenty		Caret		
Thirty	..	..	..	..
Forty	..	..	..	..
Fifty	..	..	..	..
Hundred	..	..	..	..
Of	Mi. Mo, pronoun. Mo', noun	No sign, genitive first of 2 nouns	Caret. O, pronoun	Mi, pronoun
To, Dat. & Conj.§	Caret	Caret	Lagi	..
From, out of	Dáká. Dano	Dángká	Gná	Ám
Towards	..	Yatni. Yatnung. Yatnung on level: see	..	..
By, inst.	Wá	Ya. Á	Gná	Á
By, close to sion	Chak = side	Chakda	..	..

* Crude sign. † Eukta = eu-k-ta or ek-go-ta-chha homo ; euk-chha mana = one man. Chha humans, euk chha duwa-chha one woman, eukchha mechchha chha, one child, eukchha chha wang for chha after one : pop for animals and things, major and minor, eukta, eukpop thopi = one cap.

‡ Bang pung for humans and pap pop for things and beasts is Mikir. Ya is added when numerals are used alone or substantively in Bontawa.

§ To, tir taraf, to, near ; cheun, to, as far as, usque ad.

Wáling.	*Yákha.*	*Chouras'ya.*	*Kulúng'ya.*	*Thulung'gya.*
Ángkapik	Aengá	Ikileme	Wokhimi	Ákima. Ikimá
Hąyekkapik	Ning gá	Múyemleme	Ámnimi [kwachimi	Inimá
Káyankapik	Ichiga	Gono matichaleme	Kwachimi. Na	Hanommikám
Aktai. Akta	1k' ko	Kolo	Ubúm	Kwong. Kong, humans. Kole, animals
Ni. Hasa. Hasak	Kichchi*	Nik'si	Nih'chi*	Níchi. Ni. Nale, animals
Syum' ya k	Sum'chi	Súm'makha	Sup'chi	Syúm, humans. Sule, animals
Lá ya k	Líchi	Phíbakha	Líchi	Blí. Bleule
Gná ya k	Gná hi	..	Gnáchi	Gno. Gnolo
Túk ya k	Tuk'chi	..	Túk'chi	Ro. Ru. Rule
..	Núchi	..	Núchi	Seren. Ser. Serle
..	Phang'chi	..	Rechi	Yen. Yet. Yetle
..	Yecchi	..	Bong'chi	Gú. Gale
..	I'bong. 1k' bong	..	Uk'bong	Kong'dyúm. Kwong dyum
..	Hí bong	..	Caret	Kong usang. Kwongusang
..	Súm'bong	..	..	Kwongus-ang Kodyum
..	Lígit	..	..	Naasang
..	Gnágip'	..	..	Naasang ko dyum
..	Maknaibong	..	..	Gnosang
O	I'. Ga, pronoun	Caret. Lemá, pronoun	Mi, pronoun	Kam
Caret	Á	..	Caret	Caret
Pangkwa	Bwang	Logno	Gna. Á. Piká	Dang. Káng
Dáng ká	..	..	..	Honthyo
Á	Gná	Kho	Á	Ká
..	..	..	..	Phar'da

* Chi, D., Mim. Pl.

English.	*Rodong, or Chámling.*	*Rúngchhénbún.*	*Chhingtángya.*	*Náchherêng.*
By, possession.	..	Da	..	..
With, cum. Sáth in Hindi & Urdú	Pida	It' nan	Núng	Gnáng. Máng
By, at, near	..	Chakda	..	..
Without, sine. Bina in Hindi	Madang	Madang. Mandang	Mángchi	Mángdi
In	Dá	Dá	Be. Pe	Pi
On, upon	Cho = top	Chokdo. Dungda		
This, Conj.	Hic hæc hoc. Hyákkó. Tyo	O'. Oko* Oko chi. Dual	O'kó. Bago. Nago	Unú. Angna
This, Disj.*	Ditto.	Okonin. Pl.		
That, Conj.	Dósó. Tyako	Hyaoko. Euhyaoko.† Moko.	Khókhó. Mogo.	Khán koú. Yakgna
That, Disj.		Khokho‡		
Now, ab [tab	Wósara. Wospa	Hangde. Hande.	Bágári	Ha
When, jab. Then,	Khónglo. Tespa	Khómló. Khollo.	Uílhe	Khóntalo
When? kab, relative and inter.	Délo	Démkhé	Ánám	Ádem
To-day	Aí. Ále	Aya. Aí	Páyam	Áse
To-morrow	Sén la. Sen lam	Mángkolén	Wárangda	Sála
Yesterday	Áse	Ákhómáng	Ásinda	Áspa
Here	Wada	Oda	Báye. Báyétni	Ik. Yéksa
There	Túkhe. Tuku	Euhyana. Eudhako. Móda. Miyanung [nung	Yótni	Méksa. Miyaya
Where?	Khoda	Kháda. Khádaduk.	Hókét	Háppa. Hápbále
In top (chó). Above	Dhala. Dhálo	Euchokda. Múdhâni Údhâni } far Euchongda. Eukhukda	Utéube	Itwa ta. Itó ta
[Below (Yu)				
In bottom (Khu)	Hila. Hwílo	Múpúni. Uyuni	Móba	U yúyu
Between	Mrá. Máru	Lúmda. Râdoa. [ya. Huviya	U'rhábe	Umlam
Without, outside	Búng ya	Ubungya. Udung-	Báhári	Pákhá
Within, inside	Kung ya	Ukonghud'ya. Ukông ya. Kongda.§ Euhun'ya	U'kúmbe. Khim'báyu	Khimgwa. Khimgo
Far	Mokhá. Mise. Mose	Mángsa. Mangkhíyada. Mang	Mángnwa. Mangno	Chhíburu
Near	Gnan'. Gnan' ge. Nen ge	Nek-ta. Nekkhïda. Neék	Tanghe. Tangne	Caret
Little	Píchhe	Chi chí	Mih'mo	Chíchha

No genders D. & Pr. as usual conj. & disj forms alike.

* Genders.
† Hyako = Eu yako. O' Mó, conj. Oko Moko, disj. all genders.
‡ Khokho, not present person, sort of relative.
§ Da the midst, kong, the within, subs. hud, a hole.

Wáling.	*Yákha.*	*Chouras'ya.*	*Kulúng'ya.*	*Thulung'gya.*
..	..	..	..	Da
Pi. Edá. Inan	Núng	Bilo	Gámpi. Lo	Nung
..	..	..	..	..
Mochhi	Mánnúng. Metning	Sokho	Mándi	Mánthi
Inan. Da. Ida	Be. Songbe	Lo	Pá Pi. Gopá. Pitú. Themtú	Ná. Dá. Dú. Deuda
O'gná. O'kó. Ipigna.	Khena. Ná. Námá. Áme		Ingkóng. Inkopi	} Wó. Wóram Wo chi. Dl. Wo mim. Pl.
Khógná. Khóko. Haya ya	Yóna. Yónámá. Íme		Múngkong. Nákong. Nakopi	Myó. Myórám. Hanúm
		[kemmo	[Hogna	
Isgháring	Akku	Bokkémse. Bo-	Wadolo. Wolló	A thá
Húlong	Íkhóning	Ingyéló	Khodolo	Méhómlo
Dem'kha. Khínam	Hétning. Heh'ning	Áseló	Hádolo. Hádémiye	Hám syúká
Áilo. Áyo [kolen	Hoh'yen	Tianso	Yése	Anep
Hámáye. Mang-	Wáng'di	Dis'na	Désa ah'	Díka
Áse. Akomang	Áchhén	Saiso	Is'pa	Básta
Iyák. Wada. Waya	Khé. Nákhé	Alo. Amna. Alvi	Yéksa. Ingkwápi	Áno. Ási. Asinda
Múyák. Modo. Moya	Yóna. Yókbyá	Bhanala. Bhána. Gnóna	Méksa. Nakwápa. Náya	Háno. Hanopna,
Khíni. Kháda.	Héh'na. Hénnéhé	Thálo	Hápise. Hákwade	Báte. Bánte
Itá. Adháni. Angyúni	Tó	Bháta. Imtóla	Umdúptu. Métwáka. Metyoka	Deuda
			[ka ah	
Itú. Akhúkyu.	Mó	Bháya. Bhayola	Umdhókpu. Núk-	Goyu
Umrápe. Arádha. Adhung'ya	Ilúm	Kháchi. Khachilo	Umrápi	Théte
		[Gota	[Hachhópa	
Hibu. Bungkháya	Caret	Bháná. Twala,	Hochho. Pótél.	Chépnóa
Khim'ko. Akungya	Caret	Kudukwáya. Koya	Gópa	Góna. Ugwa ana
Máng'khaya	Mangdúna	Bhána	Chhúgri	Chhyubat
Mumikgná. Neh'yang	Ning'dáng	Ámna	Nén'kha	Gnépa
Áchíchi. Achí	Misyáha	Chig'nápu	Chíchha. Gíchha	Kichwe

English.	*Rodong, or Chámling.*	*Rúngchhénbúny.*	*Chhingtángya.*	*Náchheréng.*
Much	Kébha	Bad dho [nang*	Dhéra. Bádhe	Antkhópa
Up, Down, adv.		Dhutnang. Yut-		
How much?	Dúm no	Dém ye	Á'suk	Dél
As, rel. Jaisa H.	Daskwa. Dasokwa	Kháínsa	Hókhyakkha	Dákhtó
So, corr. Taisa H.	Kyaskwa. Kyasokwa	Khóínsa	Húng'khyakkha	Kháugtokgná
Thus, pos. Aisa H.	Tyaskwa ngó	Wóínsa [inse	Bákhyakkha	Antok gná
How. Kaisa H.	Dáskwa. Dásókwa	Khainsaki. Khá-	Hókhyakkha	Dákhtó
Why?	Déma	Déna. Dene	Mó'chchhá	Úmú
Yes	Ou. Ai	Ang gna	Yé. Yét	Lé. Hó
No, negative	Aí na	Má áng [infix†	Máhá	Má. Má á
Not, privitive	Í, suffix and infix.	Eu, prefix, and Nin,	Í, infix	I s-a, infix
Not, prohibitive	Mi. Mai. Dá	Man	Má. Thá	Nó
Also, And	Caret. Pini. Piti Gno	Caret. Ning. Chháng	Yé. Nang. Yáng	Sa. Ló
Or	Wó	Hé	Yáng	Lé
Which ⎫ rel. Who ⎭ jon	Tyósó	Sáng	Hokkogó	Á's
Which ⎫ corr. Who ⎭ tón	Tyakwa. Chi	Khógná	Hoén	Khan
Which? kon, chhu	Só	Kháwa Sáng-yé	Hokkogó	Á'snálé
What? kya, chhu	Dakó	Diyé	Thém	Ú'lé
Who? kon, su	Sa	Sáng	Hokkogo. Sáló	Á's
Any thing, gugu kucch [kói	Dé-í. Dyeu. Nyú	Dichháng	Thém-yáng	Usa
Any body, guhma	Isáma. Sóï	Sángchháng	Sálo'-yáng	Á'sa
Eat	Chó	Chó. D. chacheu. Chachí Pl. chanum	Chò-ha. Chò-a	Chú-u
Drink	Dúgnó. Dúgnu	Dúgnó. Dugnachu, D. Dugnanum, P.	Thú-wa. Thú-a	Dúngó
Sleep ⎧ Dual ⎩ Plural	Im'sa. Imsana	Im'sa. Imsachi, D. Imsanin, Pl.	Ip' sa	Ímsa
Wake	Púkalénda. Khrupsa	Púwalónta, Dl. chi. Pl. nin	Pógák	Póka
Laugh	Riya. Rya	Íyá. Ísa, (so shit ese Piss chesa) chi, D. nin, P.	Réta	Rhésa
Weep	Kháp a	Khá-wa, chi—nin	Há-ba	Kháp a
Be silent	Maichépda. Chyóma	Wáiwáiyú-gná. Manchehádа, chi—nin	Wáyeb	Wáhe
Speak	Chéwa. Pul'sa	Chéwá. Khángméltú,‡ chi—nin	Ché-wa	Nína
Come	Bána	Bána, chi—nin	Thába	Táwa
Go	Á'ta. Pung'sa	Khára, chi—nin	Khá-da	Kháta

* Up, Udhátnang above Uyatnang one side laterally, on all 4 sides, on level. Down, Uyutnang, below, from own place, as water flows.

† To verb and noun; omko, white, eu, om, ninko, not white.

‡ Khangmettu = show.

Wáling.	*Yákha.*	*Chourásya.*	*Kulúng'ya.*	*Thulung'gya.*
Dhéráng. Baḍhe	Pyág ha	Yétikhólse	Waddétwa. Wadetto	Dhékóng
Tem. Dem	Ingkhóg ha	Áskwalo	Déïye. Déï	[ko Hala. Hayu. Ham-
Hagné kagná	Irók ha	Ásijokcho	Dátúkwa	Heka. Hékgnám
Múgnék	Ikhók ha	Imsimégná	Khúntúkwa	Mehomka. Mihóp-
			[mó	má. O'hópma
Múgnék	Naktog ha. Ná	Ámsi mé	Wántwa. Wadóm-	Ohom [Hé
Hagnékagna	Náhók	Ási chokcho	Uḍáim. Dáim	Hésaka. Heka.
Déhá ná	Irók há. Irók	Á sé. Ámá	Dái. Dátúkwa	Hágna. Hamta
Han an. O'. Á	Ikhi	Time	Yé	Misi. Bú
Máin. Má ang'	Múnna. Imúnna	Átti	Má [fix	Méë
I', suffix	Ni. Nin, infix	A, prefix	I', infix. Ma, pre-	Ma, prefix
Má yé. Máï	An, prefix.	Á. Nó	Na	Mé
Chha	Yó. Áng	Yé	Só	Nung. Bó
Hé	E	Ké	Yo	Dé
Kháú	Isá	Thámé	A sá	Uhém
Khógná	Ikhi	Emé	Kho	Myo
Kháú	I sá	Thámé. Áchú	Ás. Ásdatukwa	Syú
Tikwa	I. E	Á má	Uso. Úi	Hám
Dei	Hétnámá. Hét ná	Á chú	Ásé	Syú. Uhém
Ti ikchhú	Ichá	Ámá yé	Uso	Hambwa
A sakchhú	Isáchá	Á chú yé	Aso. Ás	Syubwa
Cho	Cho	Jákátá	Cho	Pé
Dúgno	Ugnú	Túkátá	Dúng'gnu	Dúgná
Im' sa	Ip'sa	Glomtá	Im'sa	Ám'sa
Thing' ta	Chéng' da	Búkátá. Sáistá	Poka	Báka
Iya	Yúttucháya	Réndá réstá	Gésa	Rísá
Khá wa	Hába	Khráptá	Khápa	Khrápda
Wáyep	Swák wáya	L há	Wait wáya	Líba
Chéwa	Chékta	Bákstá	Nèna	Jésa
Bána	Ába	Pikátá	Bána	Bíka
Khára	Khyá	Levástá	Kháta	Dak'sa

English.	*Rodony. or Chámling.*	*Rángchhénbúng.*	*Chhingtángya.*	*Náchheréng.*
Stand up	Púkalénda. Ré ta	Púwalónta, chi—nin	Yéba	Répa
Sit down	Yúgna. Hígna	Yúgna, chi—nin	Yúba	Tyúwa
Move, Walk	Póng sa. Lamtya	Lám dúma. Bíya-chi—nin	Phána	Lámdima
Run	Wóna	Lwáya. Lóya, chi—nin	Ping'da	Bal'sa
*Give { to me / to any	Ídóng. Ídu	Púáng. Chang, D. Nang, P. Pú, chi—nin	Púang. Pú	Pí a wa. Píyo
*Take { from me / from any	Né. Púkji. Púdyu	†Né. Battu. Chu-num [Moa num	Khátta	*Né. Beh yú
Strike	Chaí zyú. Chaí dyú	Mo u. Moa chu.	Téna	Yop'sú
Kill, dyu ? zyu ?	Sétyú	Séru. Sera chu. Sera num [—nin	Séra	Sítu
Bring	Baizyu. Baidyu	Báttuki bana, chi	Tháp ta	Béh' yu
Take away	Pugzyu. Púgdyu, take and go	Kháttuki khára, take and go, chi—nin	Kháttu khára. Kháttu lonta. take get up	Khé yu
Lift up, raise	Púku. Sandyu	Thénta. Thenta-chu. Thenta num	Khúrá. Thédak	Théttu
Put down	Gnásyú	Yúng su. Sa chu, D. Sa num, P.	Yúng' su	Yúk' su
Hear	Yényú	Yénu. E'nu. Ena-chu. Ena num	Khém sa	Yéna
Understand	Kámmú. Múi dyu	Mittu, chu. num	P.tta	Chí yu
Tell, relate	Rág'na	Yen mettu. Kháng-músa ? Khang-mettu	Chépta	Pú u
Good‡	Nyo. Krégne‡	§Núwo. Nuwochi, D. Manuwo, P.	Núno	Nada. Nat. Nat-khi‡
Bad	Ise. Iseko	Euwo. Anúninko. Euko. Euttko	It'no	Is'da
Cold	Chíso	Kéngko. Keng-mangwa	Rém no	Chhik' da
Hot	Kúrek'wa. Kúreko	Kúko. Ku mangwa	Kú no	Sémí wa
Raw	Mo. Ummo	Wománg. U mang	U máng	Mápe
Ripe	Tupsáko. Mattáko [Wa	Túmawo [D. Ma lem, P	Uthúbáï	Dú wák
Sweet	Lam'chho. Walye,	Lémko. Lem chi,	Lém' no	Lém da
Sour	Súre	Sún chakwa	Súntá	Chochárpa
Bitter	Khí ke	Khá kwa. Khako	Khak' no	Khik' da
Handsome	Khan nya. Sang-nya	Kháng núwo, to look at good	Uchunúno	Khan náda, to look at good
Ugly	Khái-se, to look at bad	Khán euttko, to look at bad. Khangeuwo	Uchih' no. Uchu-í no	Khái-sada, to look at bad

* Gender and number.

† D. Ne khanachi, P. Ne khananin, Bontawa.

‡ Hma gu, D. suffix, P. of Adj. chha hma ohing hma mana, N. eukchha nuwo mana, B. nu nu chi, ma nu, sub.

§ Gen. signs stick to numeral can't attach to Adj. nuwa mana euk chha nuwa chupi euk pop, chha pop, 1, wang pop, 2, wang ka pop, 3, yu longs, bop rounds.

Wáling.	*Yákha.*	*Chouras'ya.*	*Kulúngy'a.*	*Thulung'gya.*
Yé wa	Púgá	Yámstá	Thórépa	Yép'da
Yúgna	Yúgna	Bákstá	Túwa	Gaínsa
Biya	Láma	Háltá	Lámdúma	Lámdíya
Lóra	Lúk'ta	Prókátá	Búlsa	Wánda
Púang. Pú	Kapyáng. Píang Pí	Gaká. Góktá	Piyá. Piyú	Gwá áng. Gwáka
Né. Báttu	Kwé. Áktu. Kettu	Né. Paistá	Né. Kháú. Kháyu	Né. Bríya
Mó-u	Mók'tu	Túptá	Kéru	Yalsa
Se'ru	Chénu. Sísu	Syáttá	Sétu. Khóksyu	Séda
Báttu	Ap'tu	Phittá	Báh' yu	Phída
Kháttu	Khéttu. Yang khéttu	Léttá	Kháyu	Daú da
The'ntu	Khú. Théndu	Róttá	Póka	Phóká. Kwaksá
Yúng' su	Yúk'su	Chóptá	Yúksu	Jíla
Yénu	Khép'su	Thókátá	Yénu	Thyósa
Míttu	Míttu. Mettu ?	Bimstá	Min'nu	Mim'da
Khouj su	Yok'méttu	Sokátá	Póa	Sing'da
Nú. Khupunú. Amwa. Í	Núha	Dúchó	Nó. Nói. Nóyu	Nyúpa
Noúdhói. Aitpa	Nú nín ha	Ádúchó	Man'nói. Mánnó	Mínyúpa
Waché yang	Chíha	Chisó	Chhíke. Chía	Chhákpa
Kúyang	Kú ha	Táto	Hóke	Glyóglém
Umpáwa. Aamang.	Núsúmha. Inggrik	Kiábó	Mámtumkhápa. Mamdúpa. Mópé	Uchákhli
Súm'sa. Tup'sa. Bhang'sa.	Usáha. Túpsáha	Thichó	Tumkhápa. Dúpa	Thik'ta. Thókta
Lém. Lemya	Límha	Jijilúchó	Léma	Jijin
Súnta	Súá. Súha	Júrchó	Jujur	Jyúrpa
Khak	Khíka. Khigha	Kháchó	Khíke	Khépa
Khang' nú	Ichchúnúna	Ránchó	Gnáli núpa	Jyópa
Khán i	Ichchúgnána	Ránchó	Gnáli ípa	Míjyópa

English.	*Rodong, or Chámling.*	*Rúngchhénbúng.*	*Chhingtángya.*	*Náchherémg.*
Straight*	Sójho	Sójho†	Cháng no	Séjhó
Crooked	Báng go. Koko dyú pa	Yék tu.† Ukudak dak	Byángkruk	Báng-go
Black	Makchúma	Mák chakmá	Mákkachúkma	Mokchibpa
White	Páyón ma. Umpayonyon.	Omko. Wómyáng. Wopiyangma	Bathrúma	Umlók'pa
Red	Hípakíma	Hálalá mang. Hala chakma	Hálachékma	Hálálápa
Green	Hariyo	Hariyo	Chak' la	Hariyo
Long	Kíle	Akí bang. Amyetpang. Metta.	Kemèh' no	Báïpa. Répa
Short	Inang kile. Pákile	Adúng-pang. Dúng-ta	Báun no	Yétebaipá. Chichhábaipa
Tall } man	Kile. Run'de.	Kiyang. Kongyang. Kwangta	Kéno	Bhái pa. Repa
Short } man	Inang kile. Pa kile	Simta. Simyang	Unno	Yétérépa. Yetebhaipa
Small	Inangko	Uchúk páng	Míkhá	Ámsikholchó
Great	Kó. Mahipmá Mahippa	Utok pang. Utwapang	Thékhá	Um dheppa. Yétikholchó
Spherical, Round	Búplúngmá	Boptitiwo. Bopiriri. Hitriri	Kalabok'bo	Umkoldu. Púpúlpa
Circular, Square	Plangpáchimá	La ákúná, 4 corner	Cháraupátyá	Phéphé ya
Flat, depressed, compressed	Phlémpá	Phemdag wa. Phebda' wa. Phebdapma	Phémpédépmá	Phrémphrem ya
Level, as a plain	Tém má	Asémtontu. Atemma	Usémtóndokto	Umtélmá
Unlevel, uneven				
Fat	Lété	‡Léyángko. Tokpang. Chhúyangko. Chhuwo	Usámtánó	Umdhép pá Lidda
Thin	Pálété. Simámyó	Yomyangko. Ropyangko	Róng si	Ram dá
Weariness	Hó sá	Hóttáng	U hottáng	Haya
Thirst	Wáimá	Wáit má. Wámitmá	Wáik má	Wámi má
Hunger	Sáká	Sá á. Súng sá wá	Sangsáwá	Saká á

* Gender and number and crude.
† After noun or before.
‡ Utokpang or tokpang, former.

Wáling.	*Yákha.*	*Chouras'ya.*	*Kulúng'ya.*	*Thulungg'ya.*
Séjho	Sójho.	Sojho	Twáipa	Jóngpa
Bánggo	Yégékna. Yek-yang	Ulgúmcho	Mantwáipa	Míjon'gpa
Mákchúma. Mak-chakchak	Mákhrúna	Khúchyámo	Gúgrúpa	Kékéma
Bóthrúma. Wom-pichichi	Phúna	Búbjóma	Wómlópa	Búbúm
Hárchhókma. Ha-lachakchak	Phána	Lakachíma	Hálalápa	Lálám
Chak'la	Phína	Sisijókcho. Sisi-joma	Gigípa	Gigim
Baḍhemet. Rhinbo	Kéna	Hik'bo. Yotihicho	Wadbháipa	Dhyúpa
Achimét	Lúklúk na	Ahikbó. Amsihi-cho	Chibhái ipa	Dókhóndhyúpa
Kíyáng	Kéná	Róbó. Rocho.	Wadréppa	Yépa
Dúiyáng	Lúklúkna	Aróchó. Aro bo	Chireppa	Dókhón-yé pa
Achókpa	Mih' na	Yokka	Chisma	Kíchem
Atók'pa	Mákna	Khol bo	Dhéppa	Dókpu
Kalabókbók	Kákliktikara. Púk-púkna	Khitiriri. Dolo	Júmjúmpa. Púl-púlpa	Púpúlma
Layá khúktáng	Lichina yúsúk	Charkuné	Lih khónglá	Khikér-ma
Phimpichichi	Phékphékná	Plém plím mé	Phemphémpa	Plém plem má
Tómtú	Idém má.	Koyogná	Tél má	Dhép dé
Chitpo. Badhépo Léb yang	Yémnúbá	Khól bó	Léipá	Sénipá
Róng yang. Achit-pó	Háchigókná	Yokká	Gamsipá	Jerpá
U' hottáng	Yáksyángná	Bál mé	Gúmó	Griúm dá
Wáik má	Wáitmáng	Dak khó	Wámmá	Kódá
Sáang sa wá	Sák	Krémkhó	Sáká	Krúim

Continuation of the Comparative Vocabulary of the several dialects of the Kiráutee language. *By* B. H. HODGSON, *Esq., B. C. S.*

English.	*Báhinggyá*	*Lóhóróng.*	*Lámbichhong.*	*Báláli.*	*Sáng páng*	*Dúmi.*	*Kháling*	*Dúngmáli.*
Air	Jú	Hiwá bá Higwá-phak	Him-má	Húwápa Húwá-ma	Him-má. Heu	Húh'-ú. Hu'-u	Jhúng	Heuk, Himma
Amaranth	Gósaráni	Mang gárá bújá	Mángrábúja Mangza	Mang-gar	Chípanám Chípanap	Lúng-kúpá	Lúng kúpá	Chhénná
Ant	Gága chimmo	Pong-khórók Yángkhrépa	Ya'-Khrépá Póng Khorok	Yá khlépa	Chhámphalú Champa-leu	Chiká-répú [bu	Grákmó	Chig-yáng
Arm	Gú	Húk H.	Múk. Muh'	Húk. Huh'	Húh	Khúr or Khur-	Khar	Chhúk. Chhu
Arrow	Blá	Phé. Thúklá Nóbé	Thuk-la. Phet Pheh'	Thuklá	Sébi	Númú-ú. No mo wo	Sélmó	Pó
Barley	Cho'-ja	U'wa	Suchámа*	Chícháma	Chhóng-khá	Chóphu		Chhóng
Bamboo	Pálám large Ri'cho small	Báphú	Sak'pha. Sak-phaitangli	Bapho	Baphu			
Bird-kind	Chik'ba	Sóng-wá	Nówa	Chhóng-wa	Chhón-wá	Sal-po	Sal-po	Chhong-wá†
Bird male	A'po chik'ba	Um'pa Sóngwá or Umprúpa	Nówá impá Im'pa nówa	O'pa chhong'-wa	Umpa chhón-wá	U'pú. Upyap salpú	U'páp. Salpó	Umbhá chhong-wá
Bird female	A'mo chik'ba	Um'ma Song-wá or Ummruma S	Nówá imma Im'ma Nówa	Om'ma chong-wá	Ummá chhón-wá	Umú Umyám salpú	U'mam Salpó	Ummá Chhong-wá
Bitch	A'mo khlícha	Ummá húk'wá Ummruma	Imma ókóchú	Om'ma kóchúma [wa	Umma ha-aga Umma hóga	Umú Umyam khléb	Um'ám Khlébá	Um'má kútimá
Blood	Húsi	Hári	Háli	Héllu-wa. Hel-	Hí	Hí	Hí	Hí
Boar	A'po-po	Umpá bág' Umprupa bak'	I'mpa óphak Impa phak	Búcha (gelt) Opa bak	Lámi bhá‡ Um'pa bhá	Télchyo. Tilá	Tél	Umbhá pák
Boat Bhat	Dúnga	Dúng'-ga	Dúng'-gá	Dúng-gá	Bakhon	Bákohpú. No	Pókham	Dun'ga
Boiled rice or	Mómara	Chám	Chámá	Chám	Ko	Jyá. Já	Já	Kvak. Koak
Bone, see horn	Rísé Ri sye	Syákówa fresh	Rúk'-wa Rú-k-wa	§Sátuprú. Sa-tú-p-ru	Tum'bu-rup. Sá túmburú	Salú. Só ló	Solo	Súr-wá Sá-rú-wá
Boy	A'ta wáisá bé-báchá. Tá-wa wais-a táwa	Wáthápapasa Wadhampa pasa	Yém'-bachhá	Pih'-chhá. Wa-thakpachhá	Wáchchhachhá Man child	Pi'-dam. Las-béchyo Langchúbú	Chwe-chwe Las-báchwe	Mir'chhachhá
Buffalo-kind	Mésé	Sán wa	Sáng-wa	Sáng-wa'	Mési	Més	Més	Sang-wá

Buffaloe male	Ápo mésé	Umpá Sánwá Umprupa S.	Impá sáng-wá	O'pá sang-wá	Umpá mési	Upú. Upyáp més	Upáp més	Umbhá song-wá
Buffaloefemale	Ámo mésé	Ummá sánwá Ummruma S.	Immá sáng-wá	O'mmá sang-wá	Ummá mési	Umú. Umyam més	Umám més	Ummá song-wá
Bull	Ápo bing Bing	Umpá pí Umprupa pi	Impá opit' Im'pa pit	O'pa pih'	Umpa pih'	Bhai. Upubí	Uchorpobhai	Umchhosbá. Umbha pit
Bow	Lí	Si gi	Rídang	Bíchhi	Bhí chi			
Calf-kind	Bingáta. Bingátamiátá	Pepasá	Pit' ichhá	Pih'-pachhá	Pich-chhá	Bípoúchú Gyaipo-úchyo	Gaikámuchésa	Um'chhapit Pit' um'chha
Calf male	Bing, ápoátáwa. Bing tá wa	Umprupa Umpá pípasa Pi' pasa	Im'pá opit-ichhá	O'pá pih'-páchhá	Umpá pích-chhá	Bipoúchúúpú Gyaipoúchyoúmyám	Gaipoúpápuchésa	Umbháchhapit
Calf female	Bing amoátámi. Bing tami	Ummruma Umma-pípasa Pi' masa	Im'ma opit-ichhá	O'mmá pih'-pachhá	Umma pich-chhá	Bípoúchúúmú Gyaipouchyoupyap	Gaipoúmámúchésa	Ummáchhapit
Cat-kind	Bir'ma	Myou ma	Múnumá	Mini-má	Mánimá	Birmá. Múni	Birme	Mánimá
Cat male	Ápo bir'ma	Umprupa Myou ma	Impá-omúnuma	O'pá minimá	Umpá mánimá	Upu múni. Upyáp bir'má	Upáp bir'me	Umbhá mánimá
Cat female	Ámo bir'ma	Umpruma. Myou ma. Umma	Immá-omúnumá	O'mmá minimá	Umma mánimá chí, Pl. PS,	Umú Múni Umyám bir'má	Umám bir'me	Umma manimá
Child-kind‖ Dual plural A-ta his Wa ta my	Támitáwa Bébacha Bakechám Atamiáta	Písa chí. Pas-a (chi Pl.)	Chhá Chháchhí Ichha	Pí-chhá Pa-chha	Chhá-chhe chhá	Chyochyo	Uchyé	Chháche
Cow	Ámo bing	Pik. Pi' úmma Ummruma pi'	Pih' Imma-o-pih'	Pih'. O'ma pih'	Umma pí	Gyai. Bí	Gai	Ummá pit
Cock	Apo ba Sori-wába Sori wá	Wápa. Umprúpa wá	Impa-wá Wá im'pa	Wápá	Wápá	Koklup Upú-phú	Koklap	Umbhá-wá

* Já vel chá generic sign, see grain.

† No = Chinese Nyou, and Sá vel Chá (whence song, chon, chong and chik) are really synonymes of wá vel bá vel pá, and = bird. But the term when used alone is now commonly assigned to the bird of birds, the invaluable domestic fowl. Chinese t-seo-k = bird has the sa root: and k suffix is precisely = the Bahing k and the Lohorong, Balali and Dangmali ng. The t prefix has endless parallels in Sifan, Himalaya and Gyarung.

‡ Búcha, Lámi = gelt male.

§ Sa Sí Séthe generic sign, see bone and horn.

‖ Tá = child, Ta wa boy, Ta mi girl, wa ta my, i-ta thy, á ta his, any one's, filius istius.

English.	*Báhingyá*	*Lóhóróng.*	*Lambichhong.*	*Bálálí.*	*Sángpáng.*	*Dúmi.*	*Kháling.*	*Dúngmálí.*
Crow	Gá-gákba	Á'rá-wá	Gáh'-wá Gak-wa	Á'ra'wá	Ar'-wá	Gápo. Gagak	Gágakpo	Gah'-wá*
Daughter Wá tami my girl.	Támi. Mimcha bébacha	Ung pasa, own chi'd. Mímium pasa. Mennumma pasa	Méchchha-chhá	Mimáchhá-chhá	Mimáchachhá Mímachha	Mésbéchyo Mí chum	Melsimá-chyé	Méchichhá
Day	Nám'ti	Lén'tá. Len.	Ilémba (i prefix)	Létta	Lépa. Umlépa	Unyol, Núlu	Unyol	Lento. Lentok Umlénto. Umlénto
Dog-kind	Khlícha	Hú' wá	Kochú	Kochúmá	Há-ága. Hoga	[bu Khléb. Khl-i-	Khléb	Kúti-má
Dog male	Á'po khlichá	Umpá hú wá Umprúpa hu'wá	Impá kochú	O'pá kochuma	Umpa há-agá Um'pa ho-ga	Upú. Upyáp khléb	Upáp kh'éb	Umbhá kútimá
Ear [globe	Sámá-nyéú	Nábak. Nába	Noro [ba	Naba	Naba	Nécho	Nécho	Náphak
Earth, the	Wáleko	Bá khá	Khamhangtang-	Bah'kha	Báhá			Wálikha
Earth, a little	Khápi [egg	Bá-khá [din	Khám [Wá-thin	Bah'khamá	Báhá	Pok. Pu-khu	Pakh	Pakhha'
Egg	Dí Bá-dí fowl	Wéh'-din. Wé-	Thin. Ithin	Wádín†	Dí	Utti. Tí	Phátté	Umting. Ting
Elephant-kind	Hátti	Hátti [pá hatti	Hátti	Hátti	Bon-lan	Hátti [hátti	Hádi	Hátti
Elephant male	Á'po hátti	Umprupa. Um-	Impá ó hátti	Upá hátti	Umpá bonlan	Upú. Upyap	Upáp hádi	Umbhá hadi
Elephant f.	Á'mo-hátti	Ummruma Ummá hatti	Immá ó hátti	Umma hátti	Umma bonlan	Umú. Umyam hátti [di	Umám hádi	Ummá hadi
Ewe	Á'mo bhéḍa	Umprupha Ummá bhéḍá	Imma ó bhéḍa	Umma bhéḍá	Umma napchubéma Napchu bema	Umyám bhén- Umú phépsú	Umám didimá	Umma bheḍa
Eye	Míchi. Mi chi da si D. Mi chi da P.	Mik'. Mi' chi D. and P. [chi'	Mik. Mih'	Múik. Muh'	Mák. Múh'	Mas. Miksi	Mash	Mak
Face	Kúli	Gnáchyák. Gné	Náphák	Gnácheh'	Gnába	Káphú	Káphí	Nyálung
Father	Mo po Dad and Mam Po Á-po, (a-pa own,) i-po thy, a-po his	Pá. Ung pa Ám pa. Um pa	Impá. Pá	O'pa	Um'pa	Upyap. Ipyáp Upú	Upáp	Pá. Umpa
Fire	Mi	Mi	Mi	Mi	Mi	Mi	Mi	Mi

Fish	Gná	Gná sa	Gnásá	Gná	Gná	Gno	Gno	Gná
Flesh	Syé	Sá gen. sign	Sá	Sá	Syá			
Flower	Phúng	Búng	Phúng	Bung. Búng-wa	Búṇ-wa	Púmmá	Púngmá	Púng
Fowl kind	Bá	Wá	Wá	Wá	Wá	Pho. Phú	Pho	Wá
Foot	Kholi-blém blem = flats	Lang = leg Láng phokma	Temmaláng	Lák'phékma	Láṇ pháma	Syáb. Yú	Syál	Láng
Fruit	Síchí	Sing chási. Chasi. Sí. Si in comp.	Isa. Sing ísa	Omchási	Chási	Bopsás	Phém-sas. Sas	Umsíwa
Girl	Támi. Ming'-chabébachá Atami	Minnúminapasá Masa	Méchchhéchhá	Píchchhamímáchhá	Mímachhéchhá	Mésbéchyo. Mis-chumchú	Mélsemchye	Mechachhá
Grain	Jáma	Cha. Bujá	Cháma. Búja (ma fœm pas-	Cháma	Cháma	Jyá	Já. Dyu vel tyu ?	Chámcha Chá ma
Goat kind	Song'gara	Míthuba (bá last sign, of male	Méndi [sim]	Míthibá Mithu=mendi	Chhán'-gara	Grot. Chan'-gur	Groḍyú	Chhágar

* We have here another sample of the generic sign. See note at the word Millet. Wá vel Bá vel Pó is the class sign for all birds and the specific name for crow precedes it, precisely as in Chinese, wherein moreover the specific name (aa) is identical with the Sangpang name. Thus tseok = bird and aa-tseok = crow. So also kai = fowl, whence Shan-kai, a pheasant. So also Shu = tree (our Dumi word, less the double prefix) whence Fung shu, a Maple, and Poutei shu, a vine. In like manner kai = fowl is added to the specific names for egg, whence kai-tan vel kai-lun: and observe that here the two words, being treated as a compound like our fowl's egg, the genitive goes first minus the mark of case, though kai be in fact as much a generic sign in this instance as in that of Shan-kai = pheasant; and in fact the generic sign may be prefixed or suffixed, and this whether it stand alone or be blended with the numeral. Thus Shan = mountain. Myung, a proper name: whence Shan Myung. So yat ko yun, or yun yat ko = a man precisely as in Newari we say Chha hma manu, or, Manu chha hma. In all these respects Chinese agrees entirely with our tongues.

† Ba Pha Wá vel We' of Lohorong and Báláli is the customary generic sign derived from the word for fowl. See Notes at Bird and at Millet. In Dumi and Dungmali the U' vel Um prefix is not the same, but the ordinary articular prefix, as in U-pa, U-ma = father and mother. This prefix, and its equivalents ka and ta are almost inseparable in Kassia and scarcely less common in Gyarung. In the Kiranti tongues the ka and ta prefixes, so common elsewhere, are hardly found, and ú, having a sort of relational sense, has not been generalized into a sheer article. So in Khassia the Ka and U, elsewhere generalized, have taken a partitive sense = hic et hæc. It will be shown elsewhere that these special uses do not militate against the essential oneness of the particles in question, both as to origin and function. Thus U-pa, U-ma, vel O-pa, O-ma of these tongues are demonstrably = wo-po, wo-mo of Gyarung which again has the synonymous forms ta-pe, ta-me = ka-pe ka-me of Khassia and Ta ga-pa-n, = father of Tamil whose ta yu again = mother is pure Lepcha as is its alternative form a-yu. Ta-yu vel A-yu, a mother or wife in Tamil and Lepcha, from the yú root for man, yu-n in Chinese and You-k in Burmese. Just so from the Rí root we have ta-g-ri in Lepcha and Ta-n-d-rí in Telugu (g-ri in Bodo and Koch) for father, man. Ta-rí, ga-rí, ta-ga-rí = Ta-pa', ga-pá, Ta-ga-pa'. G soft k, as d soft t.

English.	*Báhinggyá.*	*Lóhórông.*	*Lámbichhông.*	*Balali.*	*Sángpáng*	*Dúmi.*	*Khaling.*	*Dúngmáli.*
Goat male	Ápo songgara	Umpa míthubá Umprupa	Im'pá oméndi	Upa míthibá, ba a last sign like u k ape	Umpá chhánggará	Upú. Upyáp grot	Upáp grodyú	Umbhá chhágar
Goat female	Ámo songgará	Umma Míthubá. Ummruma	Im'má oméndi	Ummá mithibá	Ummá chhánggará	Umú. Umyám grot	Umám grodyú	Ummá chhágar
Hair	Chám. Súng of head all	Tagna'. Mih' of head all and feather	Mung. Tangphúkwa (tang = head)	Tagná. Chámi. Múng	Mú-wa. Támusám (ta=head)	Dosúm. Usom head	Umarsam. Dosamúsam	Mú-a
Hand	Gúblem* arms flat	Húh'-phekma arms flat	Temma-múk	Húphek'-ma	Huh'-pháma	Khar	Phlemkhar	Chhúk
Head	Píya	Tákhrok'. Ningtang wa. Ummruma	Táng	Tákh-lo	Tákhúlo	Dhong. Dakhlok	U-dhong	Táng. Umtáng
Hen	Bá. Ámobá	Wámrúp'ma. Wama	Wá imma. Imma wa. Wámá	Wámá. Wá-oma	Wámá. Ummawáma	Phyám. Phámu. Umuphú	Uphám	Ummá-wá
Hog-kind	Po	Ba'. Bak. Bag'	Phák	Báh'	Bhá	Po. Pwo	Po	Pák. Pa
Horn see bone	G-ro-ng Grong	Deer's horn kisa tang. Tang	Sínga. Sá gen. sign	Sátáng†	Ían. Umtán	Grong. Gro	Ughrong	Khúkmútáng.
Horse-kind	Ghoḍa. Apo amo	E'n. Umprupa. Ummruma	Ghoḍa	Yen. Eún	Pa. Phun yempa	Ghoḍa	Ghora	Ghoḍa
House	Khim	Khim	Khim	Khim	Khim	Kám. Kim	Kám	Khim
Husband	Wán-cha	Nupa see wife	Yemba	Om dap'mi	Dhábmi. Umdhabmi	Da = ta root Ádúmbo. Dúmbo tawo-mi Balali	Da = ta root Ádumbu. Dúmbu tawo ta mi	Pádúm
Iron	Syál	Chyak'-chí	Chyak'chí	Phálám	Sel. Syel	Sel	Caret	Caret
Kid-kind	Songara-atámiáta‡	Míthubapasá	Mendi-ichhá	Mithibami-upchhá. Mithibampaccha	Chháng-garachhá	Grot-poúchyo	Grot poúchyesá	Chhágarchhá
Kid male	(Ápo) songara-atáwa	Umprupa. Umpa mithubápasá	Impá omendichhá	Upa mithibámiupchhá	Umpa chhánggarachhá	Upú Upyap grot-poúchyo	Grot poupápúchye	Umbhá changarchhá
Kid female	(Ámo) songárá atami	Ummruma. Ummá mithubápasá	Immá omendichhá	Umá mithibámiupchhá	Umma chhánggarachhá	Umú Umyám grot-poúchyo	Grotpo umámúchye	Ummá changarchhá

Lamb	Bhedá atá-miata	Bheḍapasá tree	Bheḍá ichhá	Bheda pachha. Bheḍi upchha	Nap'chu bema-chha	Phepsia Bhendi poú-chyo [pho	Didimo. úcehy [phung	Caret
Leaf	Sopho sá pha	Singba'. Bak'	Láphák	§Singbák. Bák	Sánbá	Sapam. Sa-	Sapang. Sa-	Sum-pha
Light	Hwa	Nám-woge. Námde	Kháte yú	Nam-oh'wa	Khásema	Unel	Háhám	Khou. Sam
Leg	Kholi	Láng	Láng	Láng	Lán	Syál	Syál	Láng
Maize	Grele womo	Mákai	Makai	Makai	Múlung-bap	Makai	Bápsás	Makai
Man-kind	Múri. Dual Muri daa si. Plural Muri	Mina. Yápmi. Yapmichi D. and P.	Máh'-mi. Mah' mi chi	Mína chi D. no Pl.	Mína	Has	Hash	Mína
Man male	Wáisa‖ [daa	Wáthápppa. Wa-thangpa	Pá. Páchhi	Wathakpa. Wá-tháppa	Wáchchhá	Las'be	Las'ba	Mírchha. Pá
Mare [gani]	Ámo Ghoḍa	Ummá ghoḍáen. Ummruma	Immá-o-ghoḍá	O'ma yen. Oma eun	Phún yemmá. Ummá ghoḍa	Umyám ghoḍa	Umám ghora	Ummá ghoḍa
Millet (kan-	Bására	Píya	Peya	Phesá	Phísá	Bú-o. Bu-hu	Bú-o	Phesá¶
Millet (kodo)	Chárjá	Pánke	Sámbo	Kháwá	Lang-chá	Lújá	Laújá	Sambíchá
Monkey-kind	More. Mooryo	Púbáng	Kubáng	Pubáng	Popán	Nús. Nuksu	Nús	Násá
Monkey male	Ápo more	Umprupa. Um-pa pubáng	Impa o kubáng	Upa pubáng	Umpa popán	Upyáp nús	Upáp nús	Umbhá nasa
Monkey f.	Ámo more	Ummruma. Ummá pubáng	Immá o kubáng	Umma pubáng	Umma popán	Umyám nús [Lu	Umam nús	Ummá nasa [dipma
Moon	Lá	Lá	Láḍí-ba	Lá	Lá	Lúmyámtú.	Lyá	Láḍíma. Lá-
Mother	Mo.* Ámo	Má. Ma. Um-ma	Ima. Má	Má. U-ma	Má. Umma	Myám. Umy-am	Mám. Umám	Má. U'ma Umma
Mountain	Serte. Kongkú	Sani. Kongku	Sáng-gú	Yák-phú	Bhúri	Caret	Udhám	Caret
Mouth	Syeu	Yá	Yá-si	Yá	Gno	Kwom. Ko-m	Kwom	Twó

* Blem and phek, as ad doubled and ma suffix not always.

† Sá generic mark, see flesh.

‡ A ta mus atami fæm. both = our kids or kid kind, apo = ata repeated in male.

§ Sing generic mark, see wood.

‖ Wai-sa answers mi-ng-cha and swala-cha-mí, sacha root.

¶ The sá final of this series, as well as the chá vel já of the next series of words is the generic sign for all grains. It will presently be shown, in detail, that this fundamental characteristic of Tartaric modes of speech is common (like most others equally normal and essential) to Chinese with all the neighbouring languages of Tibet, Himalaya, Indo-China and the islands. The word "egg" presents another sample and the word "plaintain" yet another, wa = fowl, and sí = fruit being the respective generic signs.

* Má my mother, Mo any mother so a pa, apo. Last = Hayu upa and Sontal apú a-ma my, i-mo thy, a-mo his, ungma, amma, umma his.

English.	*Báhinggyá.*	*Lóhóróng.*	*Lámbichhóng.*	*Báláli.*	*Súngpáng.*	*Dúmi.*	*Kháling.*	*Dúngmáli.*
Musquito	Seupyel. Sipyel	Bhúsuná K.	Tong-geng-wa	Khasuk'ma. Lamkhútia	Tokli-hán. Bahauma	Sapal	Sapal	Kong kon'gma
Name	Ning	Ning	Ning	Nang	Nan	Nang	Nang	Nang
Night	Tyúgnáchi. Tun'ga chí	Sen, compare san ap Lepcha	Isembá, Semba	Setta	Sepá. Umsepá	U'senyám	U'senám	U'mkhákhú. Khákhúi
Oil	Gyá-wa	Kewa	Kíya	Á'h'wá	Khil'lam	Khí-lem	Khilam	Á'h'-wá
Old man	Gná-wa, so ta wá, ta mi and wai-sa and pa-sa ma-sa reverses six signs	Thap'pa	Páhúba. Hú root sex repeated	Tháp-pá	Pásang. Pasyung	Páchhá	Páchhá	Táppá
Old woman	Gná-mi	Thap'má	Má húma	Thap-má	Másang. Masyung. Masyung ma	Máchhá	Máchhá	Táp-má
Ox-kind	Bing	Pí	Pih'. Pit	Pih'	Pí	Bí	Bhai	Pit
Paddy	Bura	Cham	Chá-yák	Chámang	Chá	Ryá	Ré	Kárá
Plantain	Grámuchí	Cháng-mak' si added or no	Gnáklá-bu	Gnák lásí	Gnálasí	Legnásí	Legnáksi	Gnáksi*
Ram	Á'po bheḍá	Umpa bheḍa	Im'pa ó bheḍa. Impa bheḍa	O'pa bheḍa. Bheḍa pa	Namchubepá. Umpá náp-chu-bema	U'pyáp bhendá	U'páp didimo	Caret
Rice or chaul	Seri	Sí-a	Chásák	Síya	Síra	Syor. Syar	Bé'-ser	[Chasra Chásrák.
River	Gúlo=Kho-la Dihong of Asam	Yú wa. Hong'-ma. Díhongma	Wáyá	Hong'-ma	Hokoma. Hongkoma	Rú	Yó. Ká-wá	Hong-ma
Road	Lám	Lám. Lam'-phú	Lámbo	Lam̄	Lam	Lám-daú	Lám-dó	Lám
Salt	Yúk'si.	Yúm. [sáwa	Yúm	Yúm	Rúm	Ram	Ram	Yúm
Shade, shadow	Bála	Nami dungwa			[Nap'chu			
Sheep-kind	Bheḍá	Bheḍá	Bheḍá	Bheḍa	Napchúbe.	Bhendá	Didimo	Caret
Skin	Kok'si. Koksyu	Sing hok' tree skin = bark Sáhok'† flesh cover	Sáhok'-wa flesh	Sá-ho'	Sáhok'-wa†	Sáká	Saká	Hok-wa. U'mhokwa. Sahokwa

Sky	Dwá mún	Námtrúngma	Átto.‡ Námchhiri	Nám	Ninámbobi. Nám'chho. Nánu	Nám-tú	Dhám	Nám
Snake	Búsá	Pú-se. Pusema	Pú	Pú	Pú	Bhéï	Bheï	Púchháp
Soil	Wáleko. Khápi	Bah'kháma. Ba'kha	§Khámhángtám-ba. Kham	Bah'-kha	Caret	Pok	Caret	Wáli-khá
Son = child‖	Tá-wa	Wáthap pa pasá. Wathappa pasa	Yembachhá male child	Wáthapchhá. Wathakpachh	Wáchchháchhá	Lasbéchyo	Tárápáchye	Mirchháchha
Star	Só-rú	Sánge. Sánggemmá	Chokchong-gi	Súng-emmá	Sáng-geun	Song-ger	Song-gar	Sáng-genmá
Stallion	Ápo ghoḍa	Umprupa én. Umpá	Impá ó ghoḍá	O'pá yen	Umpa phun yempa. Phún-	Upyáp ghoḍá	Upáp ghorá	Umbhá ghoḍá
Stone	Lúng	Lúng kong-wa. Lingkáwá	Lúng. Lúngo. Lung-ok'wa	Lu'ko'wa	Lúng [yempá	Lúng	Lúng	Lúng-tá
Sow	Khomi, when old. Ámopó	Ummá bág. Ummruma bak	Immá ó-phág. Phak' imma	Oma bak'. Bak'-mi óma	Khon'-ma. Umma bha	Khóm	Khóm	Ummá pak
Sun. Sunshine	Nám	Nám	Nám	Nám	Lonpá	Nám	Nám	Námchhon'g-wá sky bird*
Tiger	Gúpsá	Kíba	Kíba	Keuba	Kípa	Nyor	Nyor	Kíbhá
Tooth	Khleú	Kéng	Keng wood tree	Kéng	Kán	Gnílo. Ang'lo	Gnálu	Kang
Tree	Sing. Dhyáksí	Sin'g táng-dák. Sim mak	Sin'g-itángli. Sing-tan'gli.	Sin'tenda	Tup-sáng.	Topshú	Dhyáksá	San'g-pu
Plant	Ápum	Tangda	Tangli†	Tenda = vegetal.	Um-po †			
Vegetables, [green	Caret	Khen	Sing phá ó lúng-pháo	Phikhen	Khá-h'-yú	Ság	Gilokvái	Limkhanchok-khán
Roots	Caret	Nam khi		Caret	Khíyá			
Village	Dyal [pu	Gán wá	Ten	Ten	Té	Dél	Dél	Tén
Water	Pwá-ku. Bwá-	Yo-wá	Chú-wá. Wét	Kúng-wá	Wá. Kán-wá	Kú	Kú	Cháh'-wá
Wife	Ming	Nú-má	Mechchhá	Númá	Yú	Umeï. Meï	Umay	Mádúm

* Si = fruit. † Sa generic sign, see flesh; hok skin, sing hok bark, sa = flesh, see other paper.
‡ Átto = above and sky. § First is soil as it lies = Newari ban. Second a little separated.
‖ My son, wa ta; thy son, ú ta; his son, á ta. Ta and táwá = son, ta mi = daughter.
* Nam lonta sun rose, nam tíya sun set.
† Tangli = vegetalia = ma Newar. Oak = wai-po. Its seed wai-si, Po trees, Sí fruits, Khi roots, Syapa = potatoes, syapa khi potato *root* kundmûl syapa khi-m-po = potato plant, tangli = vegetalia; Newari má. Sing itangli wood yielding plant, phung itangli flower ditto. Raka itangli grass, ísa tangli fruit ditto. Si-ma, Swá-ma, Ghai-ma Newari. Ápum Bahing, Sing ápum, Phung ápum, Sichi ápum.

English.	*Báhinggyá.*	*Lóhóróng.*	*Lámbichhóng.*	*Báláli.*	*Sángpáng.*	*Dúmi.*	*Kháling.*	*Dúngmáli.*
Wheat	Chojá	U á. Chhong	..	Chichámа	Don-cher	Docher	Docher*	Chhong
Woman	Min-chá	Menúmmá	Má. Máchhi	Memchhá	Míma-chhá	Mes-bó	Mespá	Má
Wood	Sing [kokti	Sing [Khibre	Sing	Sing	Sang	Sang	Sang	Sang
Yam	Rébe. Swo	Námkhe. Súa.	Nángkhi	Khá	Khi	Ki	Sás-ros	Sakhi
Young man	Sevalachá	Wenchá	Wángchabáng	Weh'-chhá	Sanlan	Sáláchyo	Sáláchye	Wángchhá
Young woman	Swá-lamí	Láng-mé	Kámrum-mé	Lángna-mé	San-lan-me	Sálá me	Sáláme	Mechhábang
I	Gó	Kágná. Ká	Kágná. Ká	Kágná. Ká	Kágná	Ung. Áng-gnu	Ung	Ang'-ka. Ing'-
Thou	Ga	Háná. Aná	Kháná	Aná	Aná	In. Anu	In	Hána [ká
Thee	Na	Hana	Sunwar ditto near far					
He, She, It	Harem. Igo-Mogo	Mo-nu. Mi. Mo	Áko. Yona. Mona. Toma below, above	Mo. Kho	Moko. Meko	Mam. Yákám. Momi	Tam. Mam. Yákám	Múgo
Himself	O-ú	Mo. Mose		Mo-ó				
We dual inclusive	Gosí	Káchí	Káuchhí	Káchí	Káchí	I'chí	Ichi. Inchi	Anchákáche che suffix
We, dual exclusive	Gosúkú	Káchíka	Káuchhígna	Káchíka. Kachiga	Káchíka	O'chú	O'chá. Anchú	In'kachága
Ye, dual	Gasi	Hánáchí Anachi. Hanchina	Khánachhí	Anáchí	Ánáchí	Yechí	Yechi. Ánchí	Hánache
They dual	Haremdáa si	Igachi. Mochi. Máháchi. Mogochi	Yona chhi. Mona chhi. Tona chhi. Oukha chhi. Ako chhi. Yona chhi	Khochi-hippáng. Mochi-hippáng	Mókóchi. Mekochihippong	Yákám-sú. Ummi	O'msa	Mu. Makhache. Moko chi
We plural inclusive	Go.í	Káni	Káni	I'kin	Káyí. Kaye	Iki. Inki	I'k	Ánkán. Inkan
We plural exclusive	Gokú	Káning-ka [Kang-ná	Káni-guá	I'kká	Kani. Káyíká	O'gne. Ángkú	O'k	I'nkán-ga
Ye plural	Gáni	Hanina. Aniná	Khánáni	Anin	Ánáni	Ánni	Yen	Hánánin
They plural	Haremdaa	Míháná. Mihá-chi	Oukha. Áokhá. Yokhá. Mokha. Tokha	Khochi. Mochi	Mekoni. Meko-chi	Yákám hám. Mam hám	Am ham	Mú kha. Makhá

My	Á.† Wo. Wa	Ung	Ang. Ung. Um	Ung. Um	An	O′	Á	Ang
Mine	Wáke. O'ke. Wa ke	Kágnámi	Kákhá	Kángmi	Anami	O'po	Ápo	Aug-bi
Thy	I′	Ám	Á. Am. An	Á. Ám. Áp	Ám	Á	I′	Ám
Thine	I′ke	Hánámi	Kháná khá	Ámmi	Ámmi	Áppo	I′npo	Ám-bi
His, Her, Its, attributive	Á. Haremkeá	Um	Áko-im.‡ I′m	Mom. Khom. U′. O′. Up	Um. Mek'um	Mom. U′	Yákám. U′	I′gem. Mogom
His, Her's Its, predicative	Áke. Haremke	Momi. Meyemmi. Igomi	Yonágnákhá. Ákognákhá	Momi. Khomi	Mekomi	Mompo	Yákámpo	Igámbí. Mogom-bí
Our, dual inclusive	I′si	Káchim. En′ chi	Kánchhi	Káchim	Uchú	I′-chi	I′s	Angchu. Áncha
Our's, dual inclusive	I′sike	Káchímí. Enchi	Kánchhikhá	Kachim-mi	Uchúmi	I-chi-po	I′chipo	Ang. Ánchabi
Our, dual exclusive	Wási	Káchikám. Ung chi	Kánchhigná	Káchigám	Án chú	O-chu. An chi	O's	Ang. Ánchaga
Our's, dual exclusive	Wásikc	Káchikámi. Ung chimí	Kánchhigná-khá	Káchigám-mi	Án chúmi	O-chupo. Anchipo	O'chúpo	Ang. Ánchaga-bi
Your dual	I′si	Amchi. Ánáchim. Anchinam [chimi	Khana chhi	Ánáchim	Ám chú	Yechi. Ánchi [chipo	Yés	Amcha [bi
Your's dual	I′sike	Anchhámi. Am-	Khánachhikhá	Ánáchim-mi	Ám chúmi	Yechipo. An-	Yechipo	Am. Kanchá.
Their dual	Ási. Haremdosike	Máháchim. Umchi	Akochhi. Ákhákhhignáklá-inchhi	Kho-chim. Michim. Mochihippáng chim	Mekohippángchim	Yakam supo. Momni. Umni.	Ún-sú. U′. Amsa	Mugum. Mukhacha-cha
Their's dual	Ásike	Máháchimi. Umchimi	Akochhi kha. Ákukháchhignakhá	Michimmi. Mochihippáng-mi Kho chim mi	Mekochihippángmi	Yakam su. Momnippo. Umnipo	Yákám-súpo. Amsapo	Mukhacha-bi
Our, plural inclusive	I′kke	Kánim. Enni	Káni	I′king	Yé	I′nki. Iki	I′k	Án-ga
Our's, plural inclusive	Ikke	Káni-mi	Kánikhá	I′kim-mi	Yémi	I′nkipo. Ikipo	I′kpo	Án-bi
Our, plural exclusive	Wakke	Káninkám. Ungni	Kánigná	I′kkám	Angká	Angkú. Ok	O'k	Áng-ga
Our's, plural exclusive	Wakke	Káninkammi	Kánignákhá	I′kkám-mi	Angkámi	Angkúpo. Ok-po	O'kkam	Áng-gabi

* Suffix já vel chá, vel ché of this series is the generic sign, derived from the name of all grains. See note at "Millet."

† A only for Dad and Mam.

‡ His tree is not good, my tree is good. Akoi sing itangli nuyuk nin kha; kákhá'-ng sing itangli nu yu kha.

English.	*Báhing-gyá.*	*Lóhórong.*	*Lámbichhóng.*	*Báláli.*	*Sáng-páng.*	*Dúmi.*	*Kháling.*	*Dúngmáli.*
Your, plural	I'ni	Amni. Hánnam. Haninam	Khánani	Á'nim. Á'nimim	Á'mnú	Anni	Yén	Amga
Your's plural.	Ditto I'nike	Hannam-mi. Háninámi	Khánnanikhá	Á'nim-mi	Á'mnúmi	Annipo	Yénpo	Kán-bi
N. B.—D. and Pl. mixed in L. Bon. Balali, &c.								
Their, plural	Haremdaake. Ani	Um chi. Mihachim. Igachim	Á'okhá	Mochim. Khochim	Me-ko-chim	Mamhám	Yákám. U'	Mugum ga. Makhá-úmcha
Theirs, plural	Ditto On-ou ó-b-ban Karnatik. Ku'ong-on ong	Umchimi. Mihachim-mi. Mahachimmi. Igachimi	Á'okhákhá	Mochim-mi. Khochimmi	Meko-chimmi	Manhámpo	Yákámpo	Makha-bi
One, generic signs S. D. P.	Kong. Kwong unchanged all	Yekko, hic hœc hoc, things and animals	Thíli* n. Thi bang men only.	Ik'kú† unchanged	Itta n.‡ Euklapang	Mamhámpo Táu. Tá-wa ta Burmese	Tau. Tá-wo ta Burmese Thi Lam	Ak'po m. po = pang bang Híchi
Two	Niksi	Hich'chi, n. Hippang, m. and f.	Hich'chi. Hippang	Hich'che	Hich'chi. Hisala pang	Sak'pu	Sakpo	Sum'chi
Three	Sám	Sum-chi, n. Sumpang, m. and f.	Súm'chi. Sumbang	Súng'-che	Súm'chi. Sumka la pang	Súk'pu	Súkpo	Líchi. Richi
Four	Lé	Líchi. Ríchi. Li-bang	20 ippattu kari. ir = 2 in composition í = oui hi and pattu neuter of our pang. In both 9 and 10 confus ed om-bhattu 9 K. t-ombattu 90, nat-	Líji	Lákkabo. Laka la pang	Bhyál	Bhál	Gná-chi
Five	Gno	Gnáchi. Gnabang		Gnáji	Gnákabo. Gnaka la pang	Bhúong. Bhwong	Bhong	Túk'-chi
Six	Rúkka	Túk-chi. Tuppang		Túk'chi	Túkkábo. Tu ka la-pang	Rá wong = pong m.	Ré	
Seven	Chan ni	Nú-chi. Nuvang		Núji	Núkkabo. Nuk kala pang	Ré	Tár	
Eight	Yá	Yé-chi. Ye-pang		Yéchi	Rekabo Re-kkala pang	Rí	Rin	

Nine	Ghú	Báng-chi. Bang-pang	tu-pattu 10 K. í-p pang our 2 =i-b ban(r) K	Báng'ji			Ghú	
Ten	Kot dyum	I'p'pong, hic, hœc, hoc	Ippong m. n. f all gen. see 2.	I'p'pong			Taḍham	
Twenty	Kwong'asing	Ní bong					Khál-taú. Kál. Taú-khál	
Thirty	Kwong asing-kot' dyum	Sum bong					Taḍhamkhál-taú	
Forty	Ní pachi	Rik' pong					Khál sákpo	
Fifty	Ni pachi-kot' dyum	Gná-k'-pong					Khál sákpo-taúdham	
Hundred	Gno asing = 5 score	Ippon'g pong					Khál bhong	
1st of 2 nouns is adjective per see.								
Of	Ké. (Omitted except when used disjunctly)	Mi. (Ditto)	I. Khá. Im. Gná ka	'M. Mi	Mi	Pó	Pó	Bi. Um
To	..	..	..	..	..	..	..	..
From, local	Ding	Báng. Páng.	Behong	Páng. Pí	Piká	Biká	Bíká	Bang. Iban'gá
From, personal	Ke ding	Ditto						
By, inst.	Mi	E'. Yé	Gná	Gná	A	A. Gná	A	A
With, cum	Núng	Núng not is [rung Man dong Gya-	Lok	Lúng	Pí	Bí. Ke	Póbi. Kólo	Bit'pi. Náng
Without, sine	Mán-thí not is: Burmese thi	Meddin'g Ma-an is not N.	Mángchhi	Medding	Maud. Mán	Mánthine, Maudi	Máng-thá	Mánchhi
In. Within	Dí. Bóre. Gware	Be. Bí	Bé	Pí. Chápíttu	Pí	Yó. Bi	Bí	Pí. Yá

* Li for one, chi for rest, is neuter: bang for men only, animals are neuter.

† Ku unchanged hic hœc hoc, chi things and animals: bang men.

‡ Sangpang 1 cow, 2 cows, euli-pi 1 cow, hisali-pi 2 cows, samkali-pi 3 cows and so of all animals. Euklapang mina one man, hisalapang [mina, &c.

English.	*Báhinggyá.*	*Lóhóróng.*	*Lámbichhóng.*	*Báláli.*	*Sángpáng.*	*Dúmi.*	*Kháling.*	*Dúngmáli.*
On, upon	Tóre. Taure	Wettú. Songpi. Sokbe. Langbe	I'emdú	Chápíttú	Chhopi	Cho-tu. Tyú. Teyo	Tí	Chokpi. Chokyá
Under, beneath	Háyula. Pumai	Khukmemu. Hongpikmu						
Now	Yokhoná, ye this khona time.	Hog'nok' Honok. Igorokloonok'	Hálik	Hogno	Otolo. Wotolo	Tholo	Ánagná	Ighári
When, jab	Gnána	Anam						
Then, tab	*Mekhona	†Moklona. Wanok. Morok' lona'k	Úndena	Múdoklo	Khotolo. Kholo	Melo	Mebelo	Úghári
When?	Gyána	Ánám. Hánám.	Hembína	Hádemlo	Hallo	Hélo	Hebelo	Khinám
To-day	Ána that moon?	Áyu	Hálok	Isin	Yése	Ányol	Ányalo	Á-i
To-morrow	Dil'la night day?	Weng-dá á-ser that night	Wáring	Selmá	Sélámá	Dis'yá	Disá-á	Hámá-yóung
Yesterday	Sanam'ti that day	Á-seï. Ásen. Á-sye this in	Ásen	Yé-má	Á-thépá	Ámeski	Ámiske	Á-sé
Here	Yákáre. E'ke. Yéke	Igobe. Igiyú. Kiyú. Igi	Nábe. Nate	Kobi. Koyú	Nopyá. Nopi	Tébi	Tábi. Tábigná	Ibi. Yák
There	Nekare. Méke. Hare	Miyú. Mobe Hákiyu, that in	Yó	Mobi. Moyú	Meni. Mopyá	Yákámbi	Yakámbi	Háyeyá. Múhyák
Where?	Gyála	Hángbe. Hámpe	Hetne	Hápábi. Hápáng	Há-pi	Khebi	Khábi	Khíbi. Khíbiyá
[on top	À juju di.							
Above	Hát'yu.	Songpittú. Mittu. Mito	Itemdu. Tó	Múttú	Mitáni	Túkálá	Túká	Háte'dá
[on bottom	Apiye di							
Below,	Háyu.‡ Apum di	Khúkmemo. Mih'-mú	Ikhúk-bé-Mó	Múh'-mú	Mú-yúni	Yúkálá	Yúká	Úngkhok-mo
on middle	its bottom in							
Between	Áiyo. Aleu-da	Lúmbe. Lúmpi	Ilúm-bé	Májhábi. Luh'pi	Ammrápi	Májhábi	O'lipphíbi	Úmrá. Úmrábi
Without, out.	its out	Song-bé. Úng-phú	Áyó	Pákha yú	Amkonpó	Ghobai. Ghoyo	Pátel	Kúbú-yá
[outside	Áto-la							

Within, in, inside	its inside in Ágwádi. Agwa la§	Hongsiyú	Ichhite	Hoksyúyú	Hoptán	Utong	Ugo-ya	Um-kong-ya [khá-yá
Far	Brába. Hare	Wó. Miyo	Mánglok	Tárho	Chhúsi	Chhyú	Chhy-úpá	Máng. Máng-
Near	Neng-tha. Pumbi root base	Nen. Ningtáng	Tang-neklok	Netá	Neti. Yúbhi	Mebigná	Néphám	Nek. Nektáng
Little	Ká-chi	Mig'-mo	Míyo	Mechhúk	Uttú-chhe	Tibichyo	Tibiche	Áchichi
Much as much so much	Yáko	Dhe-rok. Dilik. Kh'wa. Chopmo	Baḍhebák	Dúklo	O'tto. Wotto	Thobe	Thebe gole	Ninám-má
How much?	Gísko	Yeh-wa	Caret	Aptoklo	Dáhile	Hebe	Hebe	Tem
As, rel.	Gekho	Mantok'						
So, correl.	Mekho	Maḍo-knok	Natte.					
Thus, correl. and positive	Yekho this way Me kho and that	Idok.. Mo-dok	Natte-khá, khá adjectival su h a man	Kodokpá	O'tá	Temphem	Támphém	Igne-go
How?	Gekho	Mantok	Hende-khá	Ápto	Yán-táko	Hemphem	Hemphem	Tete
What like	Gekhom	Mantok'ye						
Why?	Mar'cho. Mar'tha	Imang-musi. Manthong	Thimmá	Uḳhálo	Yán pi	Mápúne	Mábi	Tená
Yes	Moko	Yé	Yé	Hegne	Yé. Inchhúng. Ingná	Anmá	Gó. Ám'má	Han-an. Gó. Imchang bá
No, negative	Máh'-á	Caret	Máhá. Mále	Hé-gnane	Máná	Mo-ó	Ma-an	Máu. Jé. Soh'
No, primitive	Dekho. Ma Man, prefix	.Ni, suffix	Nin, suffix	Ni, infix	Man, prefix. I si, suffix	Ma, prefix	Ma prefix. Dokhai, pre-	I, suffix
Not, prohibitive	Ma	E'	Ang—n (ang before; n after the word)	Ná	Na	Mú	Mó [fix	Man'-to
And	Yó	Song	Lá. Chhá	Né. Yáng. [Sang	Ló	Yá	Yó. Núng	Chhang
Also	Yó	Sá. Song	Ditto. Ditto		Sáng	Yó	Núng-yo	Chhang

* Hona = time. † Lonok = time.

‡ Go down, Ha-yu lawo. Go up, Hat-yu lawo. Come up, ku wa. Come down, yu wa. Come on level, pí wo. Go on, go back, gnalla lawo, nótha lawo. Come in, Khim gware piwo. Come out, átala piwo.

§ Bahing. Come, rá-wo. Come on level all, pi-wo. Come up yu-wo. Come down yu-wo. Come in yem-gware (piwo) wo-gno. Come out, yem átolá (piwo) glu-gno. I come up, Ku-gna, 2 Ku-ye, 3 Ku. I came Ku-ti, 2 Ku-te, 3 Ku-ta. Ku-cho to come up. Yu-cho to come down. Pi-gna or Ra-gna, 2 Piye, Ra-ye, Pi-Ra, present. Pi-ti, Ra-ti, 2 Pi-te, Rate, 3 Pi-tta, Ra-ta, Preterite; verbal roots all Ku, Yu, Ra, Pi.

English.	*Báhinggyá,*	*Lóhóróng.*	*Lámbichhong.*	*Báláli*	*Sángpáng*	*Dúmi.*	*Kháling.*	*Púngmáli.*
Or	Ki. Caret	Dú. Dó	Á		Lé	Yé	Yé	Hé
This, Dual Pl.	Yam. Yem	Ígo.	Ná. Nárok	Ko-ó	Noko. Nokogná	Tem. Temgna. Tami	Tomgná	Igo
That	Myám. Mem Harem	*Mo	Yoná. Yonarok. Áko	Mo-ó	Moko. Mokogná	Momi. Yákám. Yakamgná	Mámgná	Mú-go
Who or which, relative	Syú. Seú, interrogative	Caret	Sé-ong	Ásá. Ásálo	Ásá	Syú	Khám	Khigo. Ság
Who or which, correl.	Mém = that	Caret	Úndok	Khosá. Khosálo	Khogná	Mom		Há-go
Who or which? interrogative	Syú. Seú	Ásá	Sé-ong	Ásálo. Ásá	Asá. Asále	Syúgo. Syú	Khám	Ság. Khigo
What?	Mara	Imang	Thíya	Úkha	Yen	Mimgna	Mang ga	Tigo
Any thing	Máráye	Imáng-sáng	Thíchhá	Úk-háng	Yon sáng	Máng-yó	Máng-yó	Tichhang
Any body	Syúye	Ásá-sáng causal mette	Síchhá	Ásáne	Ásá sáng	Syúyo	Súi-yo	Ságchhang
Eat	Báwo. Jáwo. Ja se, Dual Ja ne, Pl.	Chae. Cho-ye. Chai che. Chai ne	Choh. Chasa chu, D. Chasa num, P.	Chó. Cha chi, D. Cha nin, P.	Chó. Chó chu, Dual. Cha num, Pl.	Jyu	Jyú-ye. Kúye	Chóye
Drink	Túgno tung-o. Tuse, D. Tune, Pl.	Dung mette. Cha choh mette. Dung-é Dungeche. Dungane	Thúgna'. Thagna chu, D. Thugnanum, P.	Dúgno. Dagna chi, D. Dugna nin, P.	Dugnu. Dúgnú chu Dual. Dugna num, Plural.	Tíngne	Tyung'-ye	Túgne
Sleep	Ip'po. Ipse, D. Ipine, Pl.	Íme. Immette. Ipseche. Immane	Im'sa. Imsachi, D. Imsa ni, P.	Ip'cha. I-ma. Ipchasi, D. Ipcha nin, P.	Ipsa. Ipsa chi, Dual. Ipsa ni, Plural.	Am'si	Am'si	Im'se
Wake	Boko. Bokse, D. Bakine Pl.	Cheno. Poge. Poglente. Pogmette.	Poga. Pogachi. D. Poga ni, P.	Polit Polita chi, D. Polita nin, P.	Thittá-chi-ni. (Chi. Dual. (Ni. Plural	Phúge	Phúk'ye	Phú-ge
Laugh	Ríso syo. Rische, D. Risini, Pl.	Yichae. Ichoye. Ichare. Ichecche. Ichane	Rísa'. Risa chi, D. Risa ni, P.	Yúcha' Yucha chi, D. Yucha nin, P.	Ghísá-chini	Réche	Réche	Ríge

Weep	Gnoko. Nwa-ko. Gnok-se, D. Gno-kine, Pl.	Hábe. —che. Habane	Hába. Haba chi, D. Haba ni, P.	Khába. Khaba chi, D. Khaba nin, P.	Khápá,—chi-ni	Gnoke	Gnoke	Khá-be
Be silent	Líbabweko, (D. and Pl. the same). Lbwak se. Lbwaki ne	Chichú-ye. Yong-u mete. Yong-u ge ——— che ——ga ne	In'che'-nán. 'Nche'nan'chi, D. Nche'nan'-nin, P.	Chíchu-wet. Chichuwetech, D. Chichu-wetennin, P.	Wai-wai-túwa —chi-ni	Líbámo	Leba	Máncheptáye
Speak, n. utter	Boh'-ho. Bwá-ko. Bwak-se, D. Bwakine, Pl.	Yám-múse. ——che ——a ne	Chega'. Che ga chi, D. Che ga ni, P.	Púklús. Puk-lusa chi, D. Puklusa nin, P.	Niná.—chi-ni	Jé	Jeye	Ché bé
Come	Pi-o. Ráwo. Pí se, D. Pi ne, Pl.	Dábe. —che —a ne	Thába'. Tha'ba chi. D. Tha-ba ni, P.	Dába. Daba chi, D. Da-ba nin, P.	Báná.—chi-ni	Pú	Paú-ye	Tábe
Go	Láo. La-wo, see above Láse, D. Láne. Pl,	Kháḍe. —che —a ne	Kháḍr'. Kháḍa chi, D. Khaḍa ni, P.	Kheda. Kheda-chi, D. Khe-da nin, P.	Khátá.—chi-ni	Khochche	Kho-che	Khá-de
Stand up	Rápo. Rong-so. Rap'-she, D. Rapine, P.	Yébe. Ye-poge. —che —a ne	Poklonda. Yé-bá-chi-ni	Yépok. Yéba. Ye po ka chi, D. Ye po ka nin, P.	Ripá.—chi-ni	Rípha	Rep-ye	Rebe
Sit down	Nísyo. Nis-che, D. Nisine, P.	Péne. —che —ane	Yúgná. Yugna chi. D. Yugna ni, P.	Péh'-yúsa. Pe-yusa chi, D. Peyusa nin, P.	Túwá,—chi-ni	Mó	Gnáche	Yú-gne
Walk or move	Gwako. Gwak-she, D. Gwakine, P.	Lámdúme. ——— che ———a ne	Phana. Laoma —chi-ni	Dúma. Be. Duma chi, D. Duma nin, P.	Lándúma. Bi, —chi-ni	Lámthúlo	Lámthúye	Lámtúme
Run	Wáno. Wan-she, D. Wan ne, P.	Píne —che —a ne	Pin'da causal? —chi-ni	Phína. Phina-chi, D. Phina nin, P.	Bhúsa,—chi-ni	Ghúre	Ghúre	Róde
Give { to me / to any	Gï. Giovo. Gise, D. Gine, P.	Pígne. Pitte, —che —a ne	Píráng, ching D. Píra, ning P. chu D. nu P	Pigná. Pittu	Pián,—chi-ni. Píyú,—chi-ni	Bígná. Bi	Bignáye	Píyáng-ye. Piye

* Yem neu, this is good; mem ma neu, that is not good, *Báhinggyá*. Mo-nu, that is good; igo-nu, this is good, nu-ni, not good *Lohorong*.

English.	*Báhinggyá.*	*Lóhórông.*	*Lámbichhông.*	*Balali.*	*Sángpáng*	*Dúmi.*	*Khaling.*	*Dángmáli.*
Take { from me / from any	Né, immutable. La'to. Já-po. Bla-wo	Naye. Labe	Kó. unchanged. Thepta	Ná. Khettá	Né. Kháyú	Né. Kháta	Caret	Né. Kháye
Strike	Tyú-po. Tipo. Tip she D. Ti pi ne, P.	Lom-mette. Lome. Dúbe, by craftsman. Lo me chi. Lo mam ne	Tena	Lomu	Yosu. Kíru. Yop'-su	Klen'de	Yál'ye	Nó-re, Sing. Nor chíe, Dual. Nor numye, P.
Kill	Sáto. Sa ti she, D. Sa ti ne, P.	Sede, causal of sí-e, die. Its causal sed mette. Se re che. Se ram ne. Thapta.	Sera	Sedú	Sítu	Sede	Sede, Sing. Se chi, Dual. Se snaye, Pl.	Sede, S. Sede chie, D. Ser numye, P.
Bring	Pítyo. Rato. Pitto.* Pi ti se, D. Pi ti ne. P.	Láḍúppo, take and come. Laḍappe. —— che. Laḍapam. —— ne.	Tháp-ta	Dáppu. Yang-dáppu	Báh'-yu	Píde	Pide. S. Pí chíe, D. Pí-snaye, P.	Tág'-we, S, Tag wechíe, D. Tag numye, P.
Take away	Látyo.† La' tojo. La ti se, D. La ti ne. P.	Lahette, take and go. Lakhette. Lakhette che. Lakhettam ne.	Khátta. Chi khette, beings. Yi khette, beasts. La khette things	Yákhettu	Kháh'-yu	Khotte	Khátte, S. Khatte chíe, D. Kho snaye, P.	Khá-ye, S. Kháde chíe, D. Kháde ningye, P.
Put down	Jilo. Jil se, D. Jil ne, P.	Yúk-se	Yúng-sá	Yúk-su	Yú-su	Tú. Tyú	Gnánde, S. Gnande chíe, D. Gnandi niye, P.	Yúng'se, S. Yung'si chíe, D. Yung'-su num'ye, P.
Lift up	Rok-to. Rok ti se, D. Rok ti ne, P.	Thepoge. The'-lente. —— che. Thep ogam ne	Koba. Koplota	Thettu	Thettu	Thende	Thende, S. Thende chíe, D. Thende snaye, P.	Thende, S. Then'de chie, D. Then'de num'ye, P.

Do	Pá-ó. Páwo. Pa she, D. Pa ne, P.	Muse. Lette. —che. Musa-ne	Númda. Prop. ma and Priv. verbal é prefix: ni suffix.		Mó	Mú	Múye, S. Mú-íye. D. Mú-níye, P.	Mú-yé, S. Múchíe. D. Múnum'ye, P.
Make	Páwo. Has-che, D. Pa ne, P.	Dube. Tonge. Che, D. Amne, P. E'tonge. E'dúbe.	Ditto		Ditto	Ditto	Ditto	Tú-be, S. Túba che, D. Túba num'ye, P.
Make not	Má pawo							
Hear	Ni-no. Ni-nishe, D. Nin'ne, P.	Kheme. —che —mam ne	Khemsa	Yé-nu	Yénu	Ní	Níye, S. Ní-íye, D. Na niye, P.	Yé-ne, S. Yen'che, D. Yenanum'ye, P.
Understand	Mim-to Mim tise, D. Mim tine, P.	Mitte. —che. —tam ne	Mim'-da	Míttu	Mit'nu	Momsi	Mam'de, S. Mi miye, D. Mam naye, P.	Mih'-ye, S. Mih' yechíe, D. Mih'-ye-num'ye, P.
Tell or relate	Sogno, utter. Sodi, to me. Sodo, to any	Ise. —che. isam ne	Tumlúsa	Ísu	Pá-yu	Blet'te, b Le-t'te	Blátte b. La-t'-te, S. Blatte-chi, D. Blatte-sna, P.	Lú-ye, S. Lúchíe, D. Lu-numye, P.
Good	Nyú-ba. Nyuba daa si, D. Nyuba daa, P.	Nú-ye. Nuk chia. not good Nuk meha. Phen nu.	Núyu-kha	Nú-ne. Nup.	Ní	Nyúpa	Nyúpa	Nú. S. Núchíe, D. Núman'nu, P.
Bad	Mányú-ba. Manyuba daa si, D. Manyuba daa, P.	Ísa-chia. Phen-ne mia	Núyuk-ninkha. Gnasi yukha	Ísáne. Isa'p. Núuíne	Isi	Múnípa. Múmyúpa	Mányúpa	Í, S. Ichíe, D. Mayí, P.
Cold	Chhik'-ba. Chhikpa daa si, D. Chhikpa daa, P.	Yep se. Yempa. Yemukye. —chia.	Chíyúkha, yu k = yak.	Ipchhiyúne	Chhíki	Chhú	Chhak'pa	Kéng, S. Keng'che, D. Mákeng', P.

* Causal of pi, to come; pityo pátyo, cause to come.

† Láwo, go; látyo, take away, i. e. cause to go; lápátyo, (láto pátyo) cause to take away. Newari, hon, go; wonke, causal; yenke yon, take away; causal, yenke byu, give to take away.

English.	*Báhingyá.*	*Lóhóróng.*	*Lambichhong.*	*Báláli.*	*Sángpáng.*	*Dúmi.*	*Kháling.*	*Dúngmáli.*
Hot	Gle-glem. Gleglem daa si, D. Gleglem daa, P.	Kuse. Kú. Kukchia. ——Miha. Kuse.	Bon-est. Kúyú-kha	Kúne. Kú	Háki. Púti	Wál. Hai	Glogloma	Kú, S. Kúchíe, D. Makú, P.
Raw (green)	Achekhli. Achekli daa si, D. Achekli daa, P.	Men tum pa. Mákam'-pa. Men tum pa. ——chia ? ——mia	Hing-lík'ha.	Mátúpti	Man'dú. Manduwako. Mansetnáchi. Mántúmako	U'súta	U'súta	Ummáng. S. Ummang' chie, D. Umangne, P.
Ripe	Ming'-ta. Jita. Mimba. Jiba. Daa si, D. Daa, P.	Dumem'-pa. Tu mem'pa. Tum te. Tum ti gne. 1. Tum ta ne, 2 Tum ta, 3. (verb).	Thúyú yekha. Thu-yu	Túmáp = Tu-m-pa	Setnáchi. Túmako. Dúwako. Duwako tu ma ko= pak ya ko	Mis'te	Dham'pa	Túm'sá, S. Tum'-sachíe, D. Ma tum' sa, P.
Sweet	Jijim. Daa si, D. Daa, P.	Lim'pa. Lim-ni, Limte. [neg. —chia-miha. Lim uk gna, Lim ti ne, I am sweet.	Lim-yu-kha. Lemyú	Lim	Límí	Lem	Lempá	Lem, S. Lem' chíe, D. Ma lem', P.
Sour	Jyúr-ba. Daa si, D. Daa, P.	Sin'ta. Lim ni not —chia miha.	Sú-yu-kha	Sit'tu	Chúri	Jújúr	Jhár'pa	Sún, S. Sun' chíe, D. Ma sun', P.
Bitter	Ká-ba. Daa si, D. Daa, P.	Khikta. Khik'-ka. Khikni. Khik gna, Khik ti gna, } verbal. Khik chia. ——miha.	Khik'-yu-kha	Khy-u-kúp. Khe u kúp	Khíki	Khepa	Khápa	Khak, S. Khak' che, D. Makhák, P.
Handsome	Rim'-ba. Daa si, D. Daa, P.	Kam-núye Núye. Nuk chia. Nuk miha.	U'chunú-yu-kha	Khen-núng	Khánní	Bhan'gpa = bhing-hma	Bhang'pa	Khán-nu, S. Khannú chíe, D. Khan-manú, P.

Ugly	Márim'-ba	*Kammísa. Kam-m-ísa	U'chu núyuk nin. Uchu-gnásyu-kha. Uchu-gnasi yukha	Kheh'-yúg. Khen ni núng	Kháisi	Mú-bhang'pa	Mábhán'gpa	Kha-í-kha-ik' pu, S. Kha-i
Straight	Dyom'ba	Lúng-kúye. Cheng-ye. —chiha	Sori. Soríkha	Lúng-ku	Toh'-no	Dan'ta	Dhvaípa	Cháng
Crooked	Mádyom'-ba. Gung gung me	Kho-kho. O'ok' ye	O'krik'-pa. Bang'krik'pa	Khok khok-pugu	Toh'-noná	Khráda	Gúng-gúngma	Okrokrak'chi
Black	Kyá-kyám	Máik' ye. Máíye. Chia miha.	Má-yukkha. Mak-yuk	Mákthro-pa	Máo. Máka-chik'-pa	Mak'chupu	Kekem	Mákchácha, S. Makchak' pa chí, D. Makchak chak chíye, P.
White	Bu-bum'	Bíhá. Bí-ha. Bíye	O'm-yuk'-kha. Om-yuk	Béye-pa	Om'ban-lonpa	Bubum	Bu-bum	Om, S. Om-chi, D. Ma-on'gache, P.
Red	Lá-lám	Hár'rá. Chia míha	Wára-wába	Ha lá-pa	Halalápa	Halála	Halálám	Hárchhop'-chho, S. Harchop'-chho kachí, D. Har-chop'chho makat' ka chíe, P.
Green	Gígím	Phíye	..	Phiphí-pa	..	Wálu	Gígí-ma	Mak'po keke, S. Mak'po-keka-ka chí, D. Makpo keke makat-kechíe, P.
Long	Jhoí-ba	Keye. Kíbe	Ke-yu-k. Ké yuk'-kha	Kepa	Máipa	Song-pa	Song'-pa	Ki. Kigo, S. Ki cha-go, D. Maki-gochíe, P.

* Kam gy, prefix; Ka in Bahing, Ka-chim; nuyu-k, good; gna-si yuk, bad; gna-si = isa.

English.	*Báhingyá.*	*Lohorong.*	*Lámbichhóng.*	*Bálali.*	*Sángpáng.*	*Dúmi.*	*Kháling.*	*Dángmáli.*
Short	Dyakhojhoíba Dekhojhoíba	Taks'ye. Tyáksu	Wun yu-k. Wun yuk'-kha	Ték-sip	Duïpa. Dwípa	Tibichyám	Dokháisong'-pa	Tun. Tungo, S. Tun'-chíe, D. Matun'go-chíe, P.
Tall (high)	Lá-ba	Mítto, above. Keye, tall	Ké-yu-k. Ke yuk'-kha	Kí-byép	Otto-rípiko	Song'pa	Song'-pa	Badhemego, S. Badhe-mechágo, D. Bádhe-meme-ka-chí, P,
Short (low)	Dyákholába. Dekho lába	Taksye, short. Mim'mu. Míh'-mu	Wun-yuk'-kha. Wun-yu-k	Ták-sip'	Uttuchhe-rípiko	Tibichyom	Dokháisong'-pa	Tungo, S. Tun'chágo, D. Matun'-gochíye, Pl.
Small	Kachim. Ka-chi-m	Mi sy u ma Misup'-pa. Mi su k'-pa. Misu-yukha	Michi yuk'-kha. Michi-yuk	Mépa-chhá. small child	Tuchheppa	Tibichyom	Tibichem. Yakhe	Umchuk'pang or Chuk, S. Chukche-chi, D. Machuk'-kache, P.
Great	Gnolo —daa si. —da	Dhe-a. Deha. —chia miha	Theuyuk'-kha. Theu yu-k'	Dhé-pa	Um-dhep'pa	Gholpa	Ghálpa	Dhígo. Dhí, S. Dhí-chí, D. Madhik' chi, P.
Round, circular	Khíkhírme	Wengwengma. Tong-kuye.	Tong-yuk'-kha. Tong-yuk	Wángwang pa. Wáng-wáp	Khíkhírko	Khokhor'ma	Khákhárma	..
Round, spherical	Pupul'-me	Pum pumma. Pum pumye	Kák'lik-lik'kha	Puk luk-luk	Phuphul'ko. Pupul'ko	Pupul'mu	Papal'ma	Um-pop, S. Um-pophí-chi, D. Umpop-chíye. P.
Square	Lepataye	Rik' suk ye.	..	..	Líkapáta	..	Bhálchyusko	Rik'tum, S.

Flat, compressed of depressed	Plem. plem'-me,	Phekphek'-ma	Ranrankha	Phek phek-pa	Phem phem'-ko	Phlem phlem'-me	Phem phem-me	Phepchidák-da, S. Phep'chidak'da-kachí, D. Phep'chi dak'da ma-makat go-che, P.
Level, as a plain	Dyom'-ba. Adeb'de	Tem-'ma	Tenlang tong-yuk. Tenlang-ton'kha	Caret	Tem'-ma	Udel'mo	Dhoípa	Légó. Um-témma, S. Lego híchi. Hichi lógo, D. Légo-chíye, P.
Weariness	Bál	Yákṭáng	Su-a	Yák'ta, Yák	Ho yán	Ghrum'-ma	Ghrí-ma	Miho
Thirst	Bwakudwaktu	Wait'ma	Wait'ma	Waíme	Wám'ma	Kumána	Kunur'. Ku-nun'	Cháómit'ma
Hunger	Solimi	Sák' fat subs. good	Sák	Ságe	Sáka	Só-a	Só-o	Ságá. The end
Fat	Seneuba flesh good Gnolo.	Yám-nuye	Isamtai mekha	Yám'nu Dhé-pa.	Lítiko	Léï	Senupá	Dhi { next to Chuk { Légo.
Thin (lean)	Kachim. Ryam'ba	Yám-ísa	Reksu reksukha	Mépa-chá	Romiko	Róm	Jyor'pa	

Váy'u Vocabulary.—*By* B. H. Hodgson, *Esq.*

Nouns Substantive.

English.	*Váy'u.*
Air (wind)	Hójum
Affection, love	Chhánsa
Abuse	Jesi
Abode	Múlúng
Agriculture	No word
Agriculturist	Kóduvi. Víkpóvi
Amaranth (grain)	No word
Aqueduct	Dunri. Tílóm
Ancle	Léthulung
Arm—all	Gót
Arm—fore	Gót
Aunt, Pat.	Nini
Aunt, Mat.	Yeng-yeng
Ant	Chíkibula
Anus	Pó-chíng
Arrow	Blo
Ax	Khoyóng
Alder tree	Lichhing
Bag. Basket	Guh'mi*
Barley	Sáká
Bamboo	Pholo
Bark of tree	Sing kokchho
Back	Sénti
Back bone	Gátachu
Belly	Muli (organ). Bimli (whole)
Beast, quadruped	No name
Box, chest	No word
Bat kind	Pòkcheún
Bird kind	Chinchi
Bird, male	Loncho chinchi
Bird, female	Mescho chinchi
Bird, young	Bengáli chinchi
Beer	Soe. Swe
Bread	Pipra
Bitch	Mescho úri
Birch tree	Toura
Bed	Blem'chum'
Bed chamber	Imlung
Bed time	Imsing
Bee	Singwo
Blacksmith	Got thutvi. Khak-chingtuvi
Blood	Vi
Buttocks	Petuna
Battle, fight	Pat
Boat	Dunga
Bear	No word
Beard	No word

English.	*Váy'u.*
Boar	Loncho pok
Body	Chho
Burden, load	Khuli
Bone	Rú
Breast	Ripcha
Breast, nipple	Chuschu
Bow	Liwo
Bowman	Liwo-wo
Bottom, lowest part	Hutti
Boy	Loncho, choo. Tawo
Buffalo kind	Mechho
Buffalo, male	Loncho mechho
Buffalo, female	Mescho mechho
Buffalo young	Mechho choh'mi or cho'mi mechho
Bull	Loncho gai (see ox)
Breath	Hemchi
Branch, bough	Ráma
Brother	Bólo, elder. Bálu, younger
Brethren, uterine	Bolungcho
Calf	Gai cho'mi
Calf, male	Lóncho gai cho'mi
Calf, female	Mescho gai cho'mi
Can, cup	Boguna
Cart	No name
Cat kind	Dána
Cat, male	Loncho dána
Cat, female	Mes'cho dána
Cat, young	Cho'mi dáua
Carpenter	Sing chuk'vi
Cheek	Gwong-gwong
Chesnut tree	Se'lu
Chin	Kumching
Child kind	Choo.† Tamtáwo
Child, male	Táwo ‡
Child, female	Támi ‡
Clay	Nakchyongkó
Cloth	Jéwa
Cloth, cotton	Rowa jéwa
Cloth, woollen	Belisong jéwa
Clothes, raiment	Jéwa
Cloud	Kowál
Cold (frigor)	Jungsa
Colour	No word
Cane (calamus)	Dí
Cock	Loncho khocho§
Cousin, Pat.	Bo'lu. Bálu
Cousin, Mat.	(see brother)

* The h thus marked h' denotes the abrupt tone which is of very frequent occurrence. The h is often omitted as Cho'mi, little; To'po, strike; Cho'no, the nose, &c.

† The repeated final vowel marks the pausing tone which is as common as the abrupt tone.

‡ Tá is the crude, = Sontal and Uraon Dá, and wo, mi, are the suffixes of gender.

§ Kh. uttered like kw, deep in the throat.

English.	*Váyu.*
Cow	Gai
Cough	Khwen khwen
Copper	No name
Cowherd	Gai túnvi
Cotton	Rówa
Crow	Gágín
Daughter	Támi
Daughter-in-law	Choyongmi
Dance	Hóli
Day	Núma. Nómo.
Dust	Pínko
Darkness	Kwung-kwung
Death	No word
Desire, wish	Daksa
Deer	Kéchho
Dispute	Phwé
Dog	Uri
Dog, male	Lóncho úri
Dog, female	Mes'cho úri
Dog, young	U'ri cho'mí
Dog, wild	Ghárímu uri. Béne úri
Dream	Ámúng
Drink	Túntáang
Earth, the	Kó
Earth, a little	Kó
Ear	Nók'-chun'g
Egg	Chálung
Elephant	Háti
Elephant, male	Loncho háti
Elephant, female	Méscho háti
Ewe	Méscho béli
Eye	Mék' (abrupt tone)
Eye brow	Mék' kwúyu
Elbow	Koko-chus'-chu
Exorcist	Bálung
Earthquake	Dukku
Face	Gnáru
Feather	Chínchi swám (= bird hair)
Feast, festival	No word
Father	U'pú
Father-in-law	Chákhi
My father	Ang úpú
Thy father	Ung úpú
His father	Á úpú. Wáthim úpú. I'nung úpú. Minung úpú
Her father	The same
Its father	The same
Fever	Jun'gsa
Fair, market	Inglungthamlung (buying and selling place)
Fear	Ramsa. Ram
Ferry	Theklung. Lit. crossing-place

English.	*Váyu.*
Fire	Mé
Fire-place	Phulung
Field, arable	Vík. Vík
Finger	Blemen
Finger, nail	Demen, got demen
Fellow-countryman	Angki mulung-wo-mi. Angki namsang-wo-mi
Fellow tribeman	Angki thoko-wo-mi
Fish	Ho
Fist	No name
Flavour, taste	No name
Flesh	Kwún. Kon
Flint	Bo-chha lumphu
Flour	Mádi
Flea	Ri'michhing
Flower	Pung'mi
Ford	Theklung
Fly	Jáma
Food	Játáng
Fog	Kow-al
Fowl kind	Khocho, or Khwocho
Fowl, wild	Rikkho
Fowl, male	Loncho khocho
Fowl, female	Mescho khocho
Fowl's egg	Chálung. Kho-cha-lung
Foreigner, m. and f.	Gyetinam'sang-wo-mi
Forehead	Tángláng
Filth, dirt	Penki
Foot	Lé
Form	Nárung
Forest	Vik. Ghári
Fruit	Sé. Sí
Frog	Boyukwong. (Khwocho is toad)
Garlic	No name
Girl	Támi. Méschochoo.* Cho'-mi
Glue, cement	No word
Grandfather	Kiki
Grandmother	Pipi
God	Caret (Bhim Sen is the usual object of adoration
Gold	Heldungmi. (Lit. the yellow)
Goat kind	Che'li
Goat, male	Loncho cheli
Goat, female	Mescho cheli
Goat herd	Cheli tunvi
Grain	Jomsit
Groin	Chhlágalúng
Hammer	Topchyang
Hammerer	To'vi
Hand	Gót

* Choo is probably cho-wa, a male child, and cho'mi, a girl, answering to tá-wo and tá-mi. But cho'mi is now chiefly used for a little one and rather adjectively than substantively.

English.	*Váyu.*
Handle	Lu*th*chyáng (English th)
Spade handle	Chukha lu*th*chyáng (English th)
Hair	Swom
Hair of head	Puchhi swom
Hair of body	Dukhu swom
Herdsman	Gai. Mechho-tunvi
Head	Púchhi
Heart	Thum
Heel	Konteng
Hail	Bopum
Hemp	Lapchhyo
Hen	Mescho khochi
Hip	Gangpangrú
Hope	No word
Hoof, cloven, solid	Khokhek
Hog kind	Pok'
Hog, male	Loncho pok'
Hog, female	Mescho pok'
Hole	Hom (like kh). Homlung
Hoe, spade	Chokhá
Husk	Ingsu
Hook, peg	Khondu
Horn	Rúng
Goat's horn	Che'li rúng
Honey	Singwo khudu
Horse kind	No name (Goḍa used)
House	Kém
Home, dwelling-place	Mudung
Hunger	Suk'sa
Husband	Rocho
My husband	Ang rocho
Thy husband	Ưng rocho
Her husband	Ĭnung rocho. Minung rocho. Wáthim rocho. Á rocho
Instrument, Implement	Pochyáng
Intestines	Chyot
Iron	Khakchhingmi (Lit. the black)
Jaw	Rá
Joint	Thulung
Juice	Bulung
Knife	Yukchyang
Knee	Khokáli
Knot	No name
Kitchen	Khoklung
King	Pogu
Lamp, torch	Tuphi
Language, speech	Dábo. Dávo
Lip	Kumching
Leaf	Ló

English.	*Váyu.*
Tree's leaf	Sing ló
Leather	Kokchho
Leg—all	Lé
Leg—true	Poktólo
Light, lux.	Dáng-dáng
Lightning	Dángdáng bíkup
Life	Hémchi (breath)
Liver	Ding
Louse	Be'mere
Lungs	Iot'
Loom	Punc'hyáng
Load	Kholi. Khúli
Maize	Mákai
Master	Mó
Mark	No name
Market	Inglung thamlung*
Mason	Kem povi
Mankind	Singtong
Man, male	Loncho
Man, female	Mes-cho
Man adult,	Bangcho, male. Bangmi, female
Maker, doer	Povi
Madder	Láru
Mare	Mes-cho goḍa
Mill—hand	Rechyáng
Mill—water	The same
Millet (kangni)	Levi
Millet (kodo)	Dusi
Millet (juwar)	Dengsom
Millet (sama)	Náwáli
Milk	Dudu
Mist	Kokcho (cloud)
Manner, mode, way	Bá
Monkey. Macacus	Phoka
Monkey. Semnopithecus	Phoka
Measure	Pokchyáng
Medicine	No name
Mind	Thum
Moon	Cholo
Month	Cholo
Music	Dumku
Mother	Ưmu
My mother	Ang úmu
Thy mother	Ung úmu
His, her mother	Ĭnung úmú. Mynung úmú. Wáthim úmu. Á úmu.
Mountain	Cháju
Mountaineer	Chhájuwo. Chhajube mut'vi
Mouth	Mukchu
Moustache	Mukchhu swom†
Moschito	Kánáńáng

* Buying and selling place.

† Mukchhu swom = mouth hair.

English.	*Váyu.*
Mouse	Chuyu
Nipple	Chúschu
Noise	Sangma
Neck	Chhidi
Name	Ming
Night	Eksa. Yeksa
Net	No name
Needle	Pichyáng. Chuschung
Nose	Cho'no
Nostril	Cho'no humlung*
Navel	Sólipun'g
Oor	Yo'king
Oil	Ki
Oak tree	Chyakphen
Odour, smell	Namsang
Onion	No word
Ox kind	No word. Gai is now used
Ordure	Epi. Yepi
Pain	Yánsa
Palm of hand	Penteng
Penis	Tholu
Place	Lúng (in composition with verbs only)
Plant	Levi
Pleasure	Bong
Plough	Rukchyang
Ploughman	Rukvi. Rukcho-wo-mi†
Plain	Tengteng
A native of the plains	Tengteng-wo-mi. Tengtengbe mutvi
Plate, dish. Platter	Tálung
Parent	Phokvi. Bok'pingvi
Plantain	Risa
Pine (tree)	Thong chhing
Pepper	No name
Potter	Ko-chonvi
Peach	Powanse‡
Priest	None (Pater familias performs the part)
Ram	Loncho-beli
Rat	Chuyu
Rain	Nánum
Rains—the	Nánnum tokvínúma§
Rice in husk	Bojá
Rice unhusked	Chhán'ga
Rice, boiled	Ham
River	Bingmu
Rivulet	Gáng
Root	Ro-chhing
Rust	Kee
Rudder	No word

English.	*Váyu.*
Road	Lom
Rope	Dámla
Roof	No name
Rhododendron	Thán-kapu'li
Salt	Chia, culinary. Jikhom, other
Silence	Giwon
Spade. Spud. Hoe	Chokhá
Spear	No word
Shape, form	Nárung
Sheep kind	Beli (Bhenglung is the Barwal)
Spirits (distilled)	Buke'ha
Spindle	Chingchyáng
Spinner	Chingvi
Skin	Kókchho
Scull, P.	Puchhí rú
Shoe, sandal	Khokhek
Sole of foot	Lé pengteng
Seed	Ru (bone)
Seive	Yáyáng
Sleep	Impi
Sail of boat	No name
Sand	No word
Spittle	Cheku
Silver	Dawángmi. Lit. the shining, the white
Sport, play	No word
Sisterhood—the	Nunung-cho
Sister	Nunu, elder. Díyu, younger
Sitting chamber	Málung
Spider	No name
Smith	Khakching tovi
Snake	Hobu
Sky	Nomo (sun)
Son-in-law	Jánwai
Son	Táwo
My son	Ang táwo
Thy son	Ung táwo
His, her son	Á táwo. Wathim táwo. Inung táwo. Minung táwo
Shoulder	Phaka
Shepherd	Beli tunvi
Side	Yákaju. Khuk
Star	Khwámen
Summit, top	Wani
Snow	Lírí
Summer	Jekhom núma
Storm	Kungjum
Steam	Hilili
Smoke	Kulu

* Place where nose is perforated.
† Wo is masculine suffix: mi, feminine = hal-wala-wali
‡ Sé = fruit, generic sign, as Phum is for trees.
§ Literally, rain-pelting days, or rainy season.

English.	*Váyu.*
Strength	Choli
Song	Kwom
Sow	Mescho pok'
Sun	Nomo, Numa
Sunshine	Lo-gáng
Sunrise	Nomo-loksing
Sunset	Nomo-thipsing
Still	Bukcha pochyáng
Stone	Lunphu
Stomach	Muli (the organ)
Shade, shadow	Veli
Straw	Khisti
Sword	No name
Tail	Mun
Testicle	Chálung (egg)
Tiger	Bílu
Thigh	Phekteng
Thirst	Tídaksa
Tooth	Lú
Turmeric	Sinphi
Toe	Lé blemen
Toe nail	Lé demen
Tongue	Lí
Time	No name. Sing in composition with verbs)
Thread	No word
Thunder	Nomo Sángma
Thief	Khútumún
Theft	Khutu
Tree	Singphum* (Phum in composition)
Tree bark	Sing kokchho (= tree leather)*
Uncle, Pat.	Pongpong
Uncle, Mat.	Kuku
Urine	Chipi. Chepi
Man's urine	Singtong chipi
Goat's urine	Che'li chépi
Vein	Vichho lom
Vegetable, wild herbs and roots	Chokphi setung
Vetch, pea	No word
Village	No word (Mulung = dwelling-place is used)
Victuals	Játáng
Vice, sin	No word
Voice	Sángma
Valley	No word
Vulva	Juju
Wall	Khoksu
Water	Tí

English.	*Váyu.*
Water spring	Tí vok lung
Drinking water	Dakmung tí
Cooking water	Khoschyang tí
Washerman	Up'vi
Washing water	Upchyang tí
Weight (instrument)	Pokc'hyáng
Weight, heaviness	No word
Wife	Romi
My wife	Ang romi
Thy wife	Ung romi
His wife	Wathim romi. Á romi. Minung romi. Ínung romi
Dual: Our wife	Angchi romi, excl. Ungchi romi, incl.
Dual: Your wife	Ungchi romi
Dual: Their wife	Áchi-romi† or Wáthim Á Minung Ínung nakphon romi
Plural: Our wife ‡	Angki romi, excl.
Plural: Our wife	Ungki romi, incl.
Plural: Your wife	Unni romi
Plural: Their wife	Á khata-romi. Ínung khata-romi. Wathim khata-romi or Minung khata-romi
Wax	Dikphi
Wheat	No name
Winter	Jungsa nomo
Wizard	Jochháng póvi
Witchcraft	Jochháng
Witch	Jochháng povi
Wealth	Penku. Gosta
Weaver	Jeva pungvi
Weed, grass	Moksa
Woman	Mescho
Wood	Sing
Wool	Beli swom
Work	No word. Kam is used
Wound	Buma
Wrist	Gót thulung
Year	Thong
Pronouns.	
I, ego	Go
Thou	Gón
He, She, It	Wa'thi. Mi. Í. Á
We two incl. excl.	Gonakpo

* See tree's leaf where sing is only used. So also in branch of tree, root of tree, flower or fruit of tree. Newari is the same si hau = sing lo. With the entire tree of all sorts phum is suffixed, as risa phum, plantain tree = kela má Newari.

† The possessive m, mu is repeated or not and given either with the pronoun or with the numeral thus: 'of them the two the child' is Wathim nakpom cho'mi or Minung nakpo cho'mi.

‡ Wife or wives is the same. The plural sign kháta is seldom or never added to the noun when the pronoun conveys the sense.

English.	*Váyu.*
Ye two	Gonchhe*
They two	I' nakpo. A' nákpo. Wathi nakpo.* Minakpo
We all incl. excl.	Gokháta
Ye all	Gône. Gónekháta
They all	Mikháta. Wáthikháta. I'kháta. A'kháta
This	I', all three genders
That	A', Wáthi, Mi, ditto, (a, is rather possessive)
These, dual	I' nákpo: m. and f. I' náyung: n.
These, plural	I' kháta: m. f. n.
Those, dual	Wáthi nakpo. A' nakpo. Minákpo, m. f. Wathi náyung, &c. n.†
Those, plural	Wáthikháta, Mikháta, A' kháta } all genders
Self, selves	None
Myself, Thyself. Himself	None
Own, my, thy, his own	None
Any, some (koi) person	Su; Suna, D. Su nákpo, Pl. Sukháta or Susu; m. and f. subs. and adj.
Any, some (kucch) thing	Mische: n. subs. only. Mische náyung, D. Mische khata or Mische Mische, Pl.
Many, much	Chhinggnak } m. f. n. subs. and adj. and adv.
Few, little	Yanggnak }
How much, many	Hátha }
So much, many	Mitha
All	No word
The whole	Khiri. Khulup in numbering
Half	Phak: com. gen. subs. and adj. Bá, adj. only

English.	*Váyu.*
Which, What, Who, Relative, of all genders, subs. or adjectival, and	Hánung, subs. and adj. Hánung nakpo, m. f.: Hanung nayung, n.: Dual.
Which? What? Interrogative, relative, Which of several exhibited persons or things: subs. adj. m. f. n.	Hánung hánung or Hanung khata, Pl.: m. f. n.: inter. and relative†
Who?	Su. Suna, m. f. Suna nakpo, Dual. Susu, Suna suna or sukhata, Pl. m. and f.: subs. and adj.
Whoever	Sunado
What?	Mische, n.: subs. Mische náyung, Dual. Mische khata. Mische mische, Pl.
Whatever	Mischeda
Either	I' ki wathi. I' ki mi
Both	Nakpo, m. f. Nangmi. f.‡ Náyung, n.
Several	No word
My	Ang }
Thy	Ung }
His, her, its	A' } all three genders
	Wáthim }
	I'nung }
	Minung }
Dual: Our	Angchi. excl.
Dual: Your	Unchi
Dual: Their	I'nakpum.§ Minakpum. Wáthim nakpum. A' nakpum or A'chi
Plural: Our	Angki, excl. Ungki, incl.
Plural: Your	Unni
Plural: Their	A' kháta. Wathim kháta. Minung kháta. I'nung kháta

* Chhe the dual sign of 2nd pronoun is not used with 1st and 3rd. The numeral two (nakpo) is substituted.

† e. g. Hanung gothoto'pungmi mii nomi, the hand with which I struck pains me. Literally, what hand with I struck that pains. However much the Tartar tongues eschew relative pronouns, they still can and do use them in this way, and Newari which is one of the simpler Himalayan tongues herein agrees with Váyu which belongs to the complex class. So also you can say for "call the man who has come" Hánungdo dongmi mii khamto, or, more usually, Phista khamto.

‡ See numerals. Nakpo, m.; Nangmi, f.; Nayung neuter, is no doubt the proper form. But these signs are passing out of use and Nakpo is now often used for all persons, male or female.

§ I nak pum or Inung nakpo or Inung nakpum. The possessive nung is peculiar to the demonstratives which it distinguishes from the adverbs of time and place. Inungmu or minungmu, of him. Inhemu Minhemu, of here, of there. Ithemu Mithemu, of now, of then.

	English.	*Váyu.*
	Mine	Ang mu
	Thine	Ung mu
	His, her's, its	Á mu. Wathim mu. Minung mu. Ínung mu
Dual.	Our's	Angchimu. excl. Ungchimu. incl.
Dual.	Your's	Ungchimu
Dual.	Their's	Áchimu. Wáthim nak pomu. Minung nak pomu. Ínung nak pomu.

	English.	*Váyu.*
Plural	Our's	Angchimu. excl. Ungchimu. incl.
Plural	Your's	Unnimu
Plural	Their's	Wathim khátamu. Mi khátamu. Í khátamu.* Á khátamu. Potius. Minung khata mu. Inung khata mu

* I or inung, that is, the genitive sign is repeated at pleasure. Nung and ni, as well as m and mu (and also mi) are genitival and inflexional. Inung of this person: Ini of this place.

Váyu Adjectives.—Vocabulary.

	Crude.	*Affixes.* *mas. fem. neuter.*
Good	Noh'ka	wo mi mu.
Bad	Máng noh'ka	wo mi mu.
	Chek pángsing	wo mi mu.
Cunning	Máng pingvi	m. f.
Deceitful		no affix.
Candid	Diksa hotvi	m. f.
Truthful	Noh'kathum gotvi	no affix.
Malicious	Yángsa hávi	ditto.
Benevolent	Bóng havi	
Industrious	Kam povi	
Idle	Hanvi Mutvi	ditto.
	Kam máng povi	
True	Diksa	wo mi mu.
	Diksa hotvi	no affix.
False	Mang diksa	wo mi mu.
	Diksa máng hotvi	no affix.
Passionate, hasty	Risi bukvi	m. f.
	Risi not'vi	no affix.
	Risi ——	wo mi.
Placid, patient	Máng risi bukvi notvi	m. f. no affix.
	Mang risi ——————	wo mi.
Cowardly	Ránvi	m. f.
	Ram not'vi	
Brave	Mang ránvi	no affix.
	Rammá not'vi	
Constant minded, Unchangeable	Wonvi	ditto.
Inconstant, Changeable	Máng wonvi	
Wasteful, profuse	Hokcho	wo mi.
	Ho'vi:	m. f.: no affix.
Niggardly	Kháli	wo mi: no neuter.
Kind, gentle	Yánsa mánghávi	no affix.
Unkind, harsh	Yánsahávi:	no affix.
Obedient	Honvi	m. f.: no affix.
Disobedient	Máng honvi	no affix.
Mad, idiotic	Thumnasidumta:	no affix.
Licit	Pátáng: n.	no affix.
Illicit	Máng pátang	ditto
Bodily, physical	Chhomu	genitival, n.
Mental	Thummu	
Hungry	Suksa	wo mi mu.*
	Suksa metvi	m. f.
	Suksa meta	no affix.
Thirsty	Tidaksa	wo mi mu.*
	Tidaksa metvi	m. f.
	Tidaksa meta	no affix.
Naked	Gunangsenti	wo mi mu.
	Luphta	m. f. n.: no affix.
Libidinous, man	Mescho daksa metvi	m.: no affix.
Libidinous, woman	Loncho daksa metvi	f.: no affix.

Participal, like all of the same form that follow.

* Wo and mi for rationals: mu for other beings.

Gluttonous	Chhing gnakjovi	m. f.: no affix.
Drunkard, drunken*	Chhing gnaktunvi	ditto.
Foul mouthed	Jit'vi	m. and f.: ditto.
Abusive	Jisi	wo, mi. m. f.
Alive	Kenki	wo† mi mu.
	Gotvi	m. f. No sign.
Dying	Met'vi	m. and f.
Dead	Me'ta	m. and f. Participal. No affix of gender.
Sick	Met'kenvi	m. f.
Sickening	Máng phat'vi	m. f.
Sick, sickened	Met kinta	m. f.
Healthy, healthful	Phatvi	m. f. Ditto.
Sleepy, asleep	Invi. Impi yot'vi	
Healthful	Imta. Impi yos'ta	
Wakeful, waking	Si'vi. Bok'vi	
Awake, intr.	Sipta. Bokta	Ditto.
Awakened, tr. and causal	Sipta. Sip pingta Pokta. Pok pingta	
Young	Cho'mi	m. f. n: no affix.
Youthful	Ithijila (= small)	
Mature, in prime of life	Bang-cho	m.
	Bang-mi	f.
Old, aged	Chokta	m. f. n: no affix.
Strong	Choti	wo, m. mi, f. mu, n. &c.
	Choti notvi-khotvi	m. f. n.
Weak	Mang choti	wo mi mu.
	Mang choti khotvi	no affix.
Confined	Thikta	m. f. n.: no affix.
Free, Freed	Teshta	m. f. n.: no affix.
Handsome	Bing-cho	m. rationals.
	Bing-mi	f. rationals.
	Bingmu	n. and c.: bestials,
Ugly	Mang bing-cho	mi mu.
Tall, high	Jongta	m. f. n.: no affix.
Short, low	Mang jongta	ditto.
Great, big	Honta	ditto.
Small, little	Cho'mi	ditto.
	Ithijila	ditto.
Fat, fattened	Lonta	ditto.
Thin, thinned	Gerta	m. f. n.: no affix.
Tired, weary	Jyopta	m. f. n.: no affix.
Fresh, not tired	Mang jyopta	ditto.
Lame,	Khokhappovi	m. f. n.
Lamed	Mang khokvi	no affix.
Blind, blinded	Mang yenvi	m. f. n.
Deaf	Mang thatvi	m. f. n. i. e. rationals and beasts.
Dumb	Mang hot'vi	m. f. n.
Alone, solitary	Chháling	cho, m.: mi, f.: mu, n. &c.
Companioned	Kácho gotvi	m. f.: no sign.
Wise	Juk'vi. Set'vi	m. f.: no sign.
Foolish	Mang jukvi. Setvi	ditto.
Learned	Lista	m. f.: no sign.
Ignorant	Máng lista	ditto.

* Drunken = drunk cannot be applied to a being, any more than heard, though beaten, seen, &c. can. The inherence of the passive sense in the past participle generally is the reason why the present participle of transitives is aoristic. Tunvi is he who drinks or drank. Tunta is what is drunk.

† Wo, vo, and mi for mas. and fem. of rationals: mu for irrationals but often used for all, as a sign of common gender.

Rich	Got'vi	m. f.: no sign.
	Penkhu	wo, m. mi, f. no, neuter.
Poor	Mang gotvi	
	Mang penkhu	wo mi.
	Penkhu mang gotvi	m. f. partie.
Noisy, talkative	Dávo povi*	m. f.: no sign.
	Hotvi	
	Itvi	
	Botvi	
Silent	Giwen ponvi*	m. f.: no sign.
Dirty	Penki	wo, m. mi, f. mu, n. &c.
	Penki notvi.	
Clean	Wota	m. f. n.: no sign.
Cleansed	Penki mang notvi.	
Married	Ro-cho†	m.
	Ro-mi	f.
	Ro-cho-gotvi, f.; Romi gotvi, m.	
	Bia pota	m. f.
Not married, single	Máng rocho	m.
	Máng romi	f.
	Biá máng pota	c.
	Ro-cho-romi máng gotvi.	
Taxed	Phengvi	m. f. n. Participal.
Exempt	Máng phengvi	
Old	Yukháng	wo, m. mi, f. mu, n. and c.
	Mithong	
New	Nyesi	wo, m. mi, f. mu, n. and c.
Ready, prepared (clothes, food &c.	Chusta	n.; no sign.
	Minta	
Unready, not ready	Máng chusta.	
	Máng minta.	
Ready	Tering	wo mi mu.
Unready	Máng tering	wo mi mu.
Common, abundantly procurable	Lingtang.	
	Chhing gnák lingtáng.	
Scarce, rarely procurable	Yáng gnák lingtang.	
Public, assert, revealed, patent	Khunta	m. f. n. No sign.
Private, secret, concealed, latent	Khista	
Successful	Hokvi‡	m. f. n. of all 3 times.
Prosperous	Hokta	
	Hoktang	
Unprosperous	Máng hokvi.	
Unsuccessful	Máng hokta.	
	Máng hoktang.	
Saleable	Thámtáng	m. f. n.

* From pako and ponche respectively.

† Rocho and Romi are so generally used substantivally for man and wife that there is some hesitation about the adjectival use of them, though "cho and mi" as suffixes are demonstrably equivalent to wo, vo and mi. Still as they are somewhat obsolete the latter are often now superadded, bing-cho-wo = pulcher, bing-cho-mi = pulchra. Other words of the same form, as Bangcho, adult or an adult, are also used in the same two ways, viz.: Bancho, bangmi and Bangchowo, bangchomi. Compare Lon-cho, a man and Mes-cho, a woman among the substantives. Bo-chho = the white-bodied, a white man, is quite a different affair.

‡ Hok', a neuter verb, is the source.

Sold	Thamta	m. f. n.
Purchaseable	Ingtáng	m. f. n.
Purchased	Ingta	m. f. n.
Similar	Totvi	m. f. n.
Dissimilar	Máng tot'vi.	
The same	Kwongmu Kwong narungmu	genitival, all genders.
Different	Gegemu	
Another	Gyetti. Gyeti	
Easy	Mang chamta m. f. n.	Past participles.
Difficult	Chamta m. f. n.	
Changeful	Jyapvi	Participles pr. and f.: m. f. n.
Changeable	Jyaptang*	No sign.
Changed	Jyapta	P. Part.
Changeless	Mang jyapvi	Pr. and fut. participles.
Unchangeable	Mang jyaptang	
Unchanged	Mang Jyapta	
Orderly, set in order	Tophta (Tosta)	m. f. n.: participial.
Disorderly, disordered	Khálim khulim pota	m. f. n.: participial.
Having possessed of tenens	Got'vi. Tovi	m. f.: participial.
Dispossessed Ousted Not having	Mang gotvi Mang gota Mang tota Thosta	m. f.: participial.
Ornamented	Bing chopota	ditto.
Plain	Máng bing chopota	
Useful	Kamu, genitival	Kampovi, m. f. Kampachyang, n.: participial.
Useless	Mang kammu. kam máng povi. kam máng páchyáng.	
Quick moving, active	Plakvi	m. f.: no neuter.
Slow moving, lazy, inert	Gatvi	m. f.: no neuter.
Wholesome, eatable	Játáng	n.
Unwholesome, uneatable	Máng játang	n.
Manufactured wrought,	Pota	n.
Unwrought	Máng pota.	
Sharp	Ye'vi	n. (verb yep'.)
Sharpened	Yepta. Yeppingta.	
Blunt	Gnumvi	n. (verb Gnun.)
Blunted	Gnuta. Gnut'pingta	
Grinded	Reta	Past participles.
Woven	Pungta	
Spun	Chingta	
Platted	Pungta	
Spacious, wide, ample	Byengta	
Contracted, narrow	Máng by-engta	
Moving, capable of motion	Duk'vi	m. f. n.
Moveable, capable of being moved	Thuktáng	m. f. n.
Motionless, n.	Máng dukvi	m. f. n.
Moved, a.	Thukta	m. f. n.
Moved, n.	Dukta	m. f. n.

* These agree as being derived from intransitive verb jyapehe. Jyapvi, who or what changes; Jyaptang who or what is wont or liable to change.

Immoveable	Mang thuktáng.	
Figured	Nárung Nárung notvi.	wo, m. mi, f. mu, n. and c.
Figureless	Nárung má notvi. Máng nárung	wo mi mu.
Figureable	Nárung pátang. Nárung hátang.	
Unfigureable	Nárung máng pátang. Nárung máng hátang.	
Luminous Shining	Dang dang mu. Dang dang dumta. Dang dang notvi.	
Illumined	Dang dang pota.	
Illuminated	Dang dang thumta.	
Illuminable	Dáng dáng má pátáng.	
Dark, obscure	Kung kung mu. Kung kung no'ta.	
Darkened	Kung kung pota. Kung kung thumta.	
Flaming	Navi, candle.	
Burning-self	Jotv'i, fire.	
Kindled-self	Náta josta.	
Kindled Lighted } other Inflamed	Náta. Josta.* Nat' pingta. Jot' pingta. Dupta.	
Burnt, consumed by fire	Yemta, general. Umta, a corpse.	
Burning, in process of destruction by fire	Yemvi.	
Extinguishing self, going out, dying (flame)	Met'vi.	
Extinguished self, gone out	Me'ta.	
Extinguished by other, put out,	Met'pingta. Sishta.	
The upper, superior	Loukha	cho mi mu.
The lower, inferior	Yonkha	cho mi mu.

* One great defect of this language (largely participated by the cognate tongues and even by English) is rendered peculiarly observable in its adjectives, owing to their being so very commonly the same with its participles. The defect is this, that all sorts of verbs (neuter, reflex and transitive) and even the various forms of the same verbal root, are confounded in the participles; that is they take identical forms as participles, though the senses be often very different. Thus Náche, kindle thyself or be kindled, and náko, kindle it, and náto, kindle it for him, all alike give návi and náta; and, as there is no separate form of the agent, návi is also the kindler. Pains are taken by the multiplication of roots to keep the several sorts of action distinct; but the further distinctions of active, intransitive and transitive action are lost in the participles by defects of structure in the language. Thus sishta is self-killed and killed by another, and náta is self-kindled or kindled by another, though nátpingta, the causal, may be used to express the latter sense. The defects of English aggravate those of Váyu. Thus a lamp that has been lighted, while it burns, is a burning lamp or lighted lamp, though the last word seems to infer what is past. In Váyu you can similarly say návi or náta tuphi, though návi (trans.) be also the lighter, not the lighted. In English you cannot say the lighting lamp for the lamp that is kindled and burning. In Váyu you cannot use the word burning which is appropriated to destruction by fire.

Right	Jájá-mu	Genitival. Mu is the genitive case sign.
Left	Khánjá-mu	
Central	Mádum-mu	
Eastern	Nomo loklung mu	
Western	Nomo thiplung-mu	
Northern	Liriphum-mu	
	Lonkha-mu	
Southern	Yonkha-mu	
Passable	Khoktáng.	
Accessible	Khokmung.	
Impassable	Máng khoktáng.	
	Máng khokmung.	
Cultivated (soil)	Rukta. Dota.	
Uncultivated	Máng rukta. Máng dota.	
Cultivable	Ruktang. Dotáng.	
Uncultivable	Máng ruktang. Máng dotáng.	
Fruitful, rich (soil)	Hokvi.	
Barren, poor sterile	Máng hokvi.	
Sandy	No name.	
Clayey	Chotáng.	
Calcarious	Chunmu.	
Saline	Jikhommu	
Muddy	Pes-chyongmu.	
Dusty	Pinkumu.	
Brackish (water)	Jikhommu.	
Fresh	Dáktáng (desirable.)	
	Chhumta (sweet.)	
Flowing	Gik'vi	
Still	Máng gikvi.	
Deep	*Kho* (s) ta.	
Shallow	Máng *kho* (s) ta	
Windy, Stormy } weather	Hojumpovi.	
Fine, fair	Noh'kamu.	
Cold	Jungsamu.	
Hot	Jeta. Jekhommu.	
Cloudy	Kokchhomu. Kokchho not'vi.	
Sunshiny	Logángmu	Genitival.
	Logáng katvi	Participal.
Rainy, wet	Nánummu	ditto.
	Nánum tok'vi	
Dry, fair	Nánummáng tok'vi	
Moist, full of vapour	Kowál not'vi	
Moist, sappy Green (wood)	Chhá'lángmu	Genitival.
Juicy (fruit)	Bulummu	Genitival.
	Bulum notvi	Participal.
Juiceless, dry	Bulum má notvi.	
	Sosomu.	
	Máng bulummu.	
Wooden	Singmu.	
Leathern	Kokchhomu.	
Stony, made of stone	Lumphumu.	
Stony, stone bearing	Lumphu notvi.	
Wet (clothes)	Ná'ta.	
Dry	Dungta. Bo'ta. Sunta.	
Wooded (land)	Thimthimmu	Genitival.
Open, naked	Lákalákamu	

Coloured	Chikta. Blekta	} Participal.
Colourless	{ Máng chikta / Máng blekta	} Participal.
Colourable	Chiktang.	
Fit to be coloured	Blektang.	
Red	Lángchhing	wo mi mu.
White (thing)	Dáwáng	wo mi mu.
White (man)	Bochho	wo mi.
Black	Khakchhing	wo mi mu.
Blue	No name.	
Green	Girung	wo mi mu.
Yellow	Heldung	wo mi mu.
Sweet	Chhingjimu.	
Sour	Juta (from Juto, make sour.)	
Bitter	Kháta (from Kháto, make bitter.)	
Ripe, ripened	Minta. Jishta.	
Ripening	Minvi. Jitvi.	
Raw	Chhálang	wo mi mu.
Rotten	Ri (s) ta, Wonta,	
Sound, fresh	Máng ri (s) ta. Máng wonta.	
Coarse	Hokhro	wo mi mu.
Fine	Nápi	wo mi mu.
Rough	Hokhro	wo mi mu.
Smooth — to touch	Liku	wo mi mu.
Smooth — to eye	Likyep	wo mi mu.
Polished	Likyep pota.	
Unpolished	Likyep má pota.	
Straight	Cheng-cheng	wo mi mu.
Crooked	Kojuláng	wo mi mu.
Crooked	Kwonghhet	wo mi mu.
Full, filled	Phul	wo mi mu.
Full, filled	Damta	no sign, m. f. n.
Empty	Polang	wo mi mu.
Self-emptied	Polang no'ta, dumta.	
Emptied by another	Polang pota.	
Causal of the last	Polang pápingta.	
Solid	Phul	wo mi mu.
Hollow	Polang	wo mi mu.
Heavy	Lista (Li, root; Lita trans.)	
Light (levis)	Oksáng	wo mi mu.
Great	Honta (size or rank.)	
Small	Cho'mi (size and rank.)	
Small	Ithijila (young)	
Long	Phinta	n.: no sign.
Short	Máng phinta	n.: no sign.
Wide	Byengta	ditto.
Narrow	Máng byengta.	ditto.
High	Jongta	all genders: no sign.
Low	Máng jongta	ditto.
Low	Tesre	wo mi mu.
Angular	No word.	
Round	Teltel	wo mi mu.
Spherical	Kulkul	wo mi mu.
Pointed	Kyerkyer	wo mi mu.
Edged	Ye'vi. Yepta	wo mi mu.
Broken / Burst — round things	Reta (self)	
Broken / Burst — round things	Kheta (by other).	
Broken, long things	Jekta (self.) Chikta (by other.)	

Torn	Jekta (self.) Jita (by other.)	
Split	Chita.*	
Intire	By negative prefix to all or any of the above 7 words.	
Porous	Jot'vi.	
Imporous	Máng jot'vi.	
Opening	Hovi.	
Open	Hota.	
Shutting	Thikvi.	
Shut	Thikta.	
Spread	Chhyá (s) ta.	
Folded	Kho (s) ta.	
Expanded, blown (flower)	Bo'ta.	
Expanding (ditto)	Bot'vi.	
Closed, shut = not expanded (ditto)	Máng bo'ta.	
Unblown, not blowing	Máng bot'vi.	
Tight	Khwásta.	
Slack	Woso. Wosomu.	
Loose, unsteady Shaking Shakeable	Hokvi. Hoktang.	
Fixed, firm	Do (s) ta.	
Unshakeable	Dot'pingta.	
Unshaking	Máng hoktang. Máng hokvi.	
Cooked	Khosta.	
Boiled	Tibe khosta.	
Roasted Grilled	Sonta Chota } Melee khosta.	
Hairy	Swom gotvi	Participal.
	Swom mu	Genitival.
Hairless	Swom má got'vi. Máng swommu.	
Feathered	Chinchi swommu. Chinchi swom notvi.	
Falling (on ground)	Rukvi	m. f.
Falling (from aloft)	Dukvi	m. f. n.
Fallen	Rukta. Dukta.	
About to fall Ready to fall	Ruktang. Duktang.	
Falling (tree)	Likvi.	
Fallen (tree)	Likta.	
Felling (man)	Photvi.	
Felled (tree)	Phosta.	
About to be felled	Phostang.	
Rising. Standing	Ivi, Buk'vi.	
Erect. Risen	Ipta. Bukta.†	
Raised. Made erect	Ippingta. Bukpingta. Pukta.	
Lifted up, aloft	Re'ta. Guta.	
Put down	Tota	
Sitting	Mutvi.	
Seated self	Musta (Muphta.)	
Seated by other	Mut'pingta.	
Lying down. Recumbent	Likvi	m. f. n.
Laid down. Reclined	Likta (self)	
Prostrated. Laid down	Likpingta (by other.)	
Wakened Awake } n. and a.	Sipta.	

* These six are nearly equal to Urdu and Hindi tuta, tora; phuta phora phata, phara.

† Ipta if previously seated: Bukta if lying down.

Awakened, causal	Sippingta.	
Waking	Sipvi.	
Wakening	Sippingvi.	
Sleeping	Imvi.	
Asleep	Imta.	
Sleepy	Impi yot'vi.	
Put to sleep	Impingta.	
Foreign	Gyeti namsang	wo-mi-mu.*
Home-bred, of one's own race	Angki namsang	wo-mi-mu.
	Angki thoko	wo-mi-mu.
Written	Blekta.	
Read	Lista.	
Desirous	Yotvi, dakvi.	
Desired	Yosta, dakta.	
Desirable	Yostang, yot'mung	
	Daktang. Dakmang.	
Eaten	Jota†	
Drank	Tungta.	
Loving	Chhanvi.	
Loved	Chhanta.	
Amiable, fit to be loved	Chhantang.	
Payable	Phengtang. Phengmung	
Paid	Phengta	
Well odoured	Noh'ka namsang	wo-mi-mu.
Stinking	Máng noh'ka namsang	wo-mi-mu.
Tibetan	Chhugong	wo-mi-mu.
Nepalese	Hengong	wo-mi-mu.
Of the plains of India	Gágin	wo-mi-mu.
Woollen, made of wool	Beliswommu	n.
Woolly, wool-bearing	Beliswom notvi	m. f.
Wooden, made of wood	Singmu	n.
Timber-bearing, woody	Singnot'vi.	n.
Golden	Heldung-mi, f. ?	
Iron, adj. made of iron	Khakchhing-mi, f. ?	
Silver, adj. made of silver‡	Dáwáng-mi, f.	
Hairy, made of hair	Swommu	n.
Hairy, bearing hair	Swom not'vi	m. f.

* Literally of another smell, smelling differently from one's own folk.

† The English senses of the participles eating and drinking must be variously expressed by the participles, infinitive and gerunds, thus, Don't hinder the eating man, Jovi or jovi singtong thá thikto. By dint of eating or by excess of eating he will get ill, Jáhe jáhe nomi (no to be ill and to be). Eating is better than drinking, Tungmungkhen jámung noh'ka. By drinking to excess he got intoxicated Chhinggnak tungtungha vímí.

‡ These last three words mean literally the yellow, the black and the shining or white. Very much as in English, they are of the same form as substantives and adjectives. They appear to be regarded as feminines because they have the feminine suffix formative, or mi.

Comparison of Adjectives.

As great as he	Wathim báhamu honta.
Greater than he	Wathim khen honta.
Greatest of all	Ini khata-* / Mini khata- } khen honta, or Sabim khen-honta.
As small as she	Wathim- / Minung- } báhamu cho'mi.
Smaller than she	Wathim- / Minung- } khen cho'mi.
Smallest of all	Inung khata- / Minung khata- } khen cho'mi, or Sabim khen-cho'mi.
Very great	Chhing gnák honta.
Very small	Chhing gnák cho'mi.
Very cold	Chhing gnák khimta.
Very hot	Chhing gnák jeta, or jikhommu.
Cold	Khimta.
Colder	Ini- / Mini- } khen khimta.
Coldest	Ini- / Mini- } khata khen khimta, or Sabim khen khimta.
Hot	Jeta, Jekhommu.
Hotter	Ini- / Mini- } Khen jeta, or jekhommu.
Hottest	Ini- / Mini- } Kháta khen jeta or jekhommu, or Sabim khen jeta.

Váyu Numerals.

Separate.	Masculine.	Feminine.	Neuter and common.
1. Kolu	Kom-pu / Kwong-pu	Kwomi / Kwongmi	Kolu
2. Ná-yung	Ná-k-po	Náng-mi	Náyung
3. Chhu-yung	Chhu-k-po	Chhung-mi	Chhu-yung
4. Bli-ning	Bli-k-pu	Bli-ng-mi	Bli-ning
5. U-ning	Ung-pu?	Um-mi?	U-ning
6. Chhu-ning	Caret	Caret	Chhu-ning

Váyu Adverbs.

Adverbs of time.

To-day	Tiri.
To-morrow	Nukun.
Yesterday	Tenchong.
Day after to-morrow	Niha.
Day before yesterday	Nithibuk.
This year	Tin thong. I'thong.
Last year	Ninganung.
Year before last	Chhukthongnung.
Year before that	Blikthong.
Coming year	Ningahe.
Year after that	Chhukthonghe.
Year after that	Blikthonghe.

* I and Mi the demonstratives make ini inung, mini minung for casus constructus; but as khata the plural sign seldom admits of inflexion, the sign of the genitive which is required by the preposition, is attached to the pronoun in singular, sometimes to both, inung khatam. Newári agrees so far that in all the construct cases it rejects the plural sign. Thus Ji-ping, we, wo-ping they, make Ji-mi, wo-mi our's their's.

Now	Abo. Ithe. Umbe } ithi-he = in this, and mithi-he
Then	Mithe } = in that (time).
When? When	Hákhe. Hákhanúng. Interrogative and relative.
Since when?	Hakhanungkhen.
By and by	Omop'he, Later. Omhe.
Instantly	Wáliga.
At once	Kophe (Kophi he.)
Before, priorly	Hubong, Honko
After in composition	Khen.
Afterwards	Nungna.
Since	Hakhanungkhen.
Till, until	Bong.
Till now Hitherto	Umbe bong. Ithem bong. Ahobong. Abonung bong.
Till then	Mithanung bong. Mithong bong. Mithe bong.
Till when?	Hakhe bong. Hakhanung bong.
From when?	Hakhekhen. Hakhanungkhen.
Formerly, long ago	Mithong. Hóngko.
At present Now-a-days	Tiri nukún.
Whilst	Not'he (in the being).
Henceforth Hereafter	Ithekhen. Umbekhen. Abokhen. Tirikhen. Ithongkhen.
Thenceforth Thereafter	Mithekhen. Mithongkhen. Mithongnunkhen.
Ever	No word.
Never	Hákhele.
Often	Giri giri.
Sometimes	Kophi nak'phi
Early (shortly) Soon (quickly)	Plak'plak'ha.
Late (slowly)	Gat'gat'tha.
At night, in the night	Eksahe. Eksa nung. Yeksa-nung-he.
In the day	Numa nung, Numa he.
All day	Numa khiri.
Daily	Hátha numa.
At sun rise	Nomo loksinghe.
At cock crow	Khochho oksinghe.
At dawn	Dángdáng dumsinghe.
At sunset	Nomo thipsinghé.
At dusk	Kungkung dumsinghé.
At night fall	Eksa dumkhen.
From night till morn	Eksakhen nomolok bong.
Noon	Khángse numa.
Midnight	Khángse yeksa.
Till noon	Khángse numa bong.
At noon	Khángse numa he.
To-morrow morning, to-morrow at dawn	Nukun dáng-dáng dum he.
Yesterday-night	Tenchong eksa.
Yesterday at night	Tenchong eksa dum he.
In 2 or three days	Nak buk'chhuk buk'he.
In 1 or 2 days	Kwong buk'nak buk'he.
In 3 or 4 days	Chhukbuk blik buk'he.
How long?	Hákbuk'.
At once, at one time,	Kophe } Ko-phi &c. are regarded as compound substantives in the nominative case. In the locative, Kophe &c. best agree with our idea of adverbs. But they are used in either case. All are regularly declinable.
Once	Kophi
Twice	Nakphi
Thrice	Chhukphi
Four times	Blikphi
How often	Hakphi

Again	Gessa.
	Adverbs of place.
Here and there	Ťthá dokhá.
Hereward	Inirek. Inungrek. Ťtha.
Thereward	Minirek. Dokhá. Minungrek. Wathimrek.
Here	Inhe.
There	Wáthe. Minhe.*
Where?	Hánhe { used also relatively and minhe correlatively. So also the interrogative of time.
Hence	Inikhen.
Thence	Minikhen. Wáthimkhen. Minungkhen.
Whence?	Hánikhen. Hánungkhen.
Which way?	Hánung lom.
By what way?	Hánung lom khen.
By that way	Wáthim lom khen.
By this way	I lom khen.
This far	Inibong. Inungbong.
That far	Minibong. Minungbong. Wathimbong.
How far	Hánibong. Hanungbong.
By that way	†Mi. Wáthi lom khen.
Near	Khe'wa.
In the near	Khe'wabe.
From the near	Khewakhen.
Far	Kho'lam.
In the far	Kho'lam be
From the far	Kho'lamkhen.
To, up to, the far	Kholam bong.
How far?	Hátha kholam.
Thus far	Inhe bong.
How near?	Hátha khewa.
This near	Ťtha khewa.
That near	Mitha khewa.
Nearer	Inikhen-khewa. Minikhen-khewa.
Nearest	Minung kháta khen khewa.
Very near	Chhing gnák khewa.
Rather near	Yang gnak khewa.
Further	Inikhen-kholam. Minikhen-kholam.
Furthest	Inung khátakhen-kholam. Minung khátakhen-kholam.
Rather far	Yang gnak kholam.
Very far	Chhing gnak kholam.
Down	Yonkha.
Up	Lonkha.
Above	Wanhe (wani-he, in the top).
Below	Huthe (huti-he, in the bottom).
Form above	Wánikhen.
From below	Hutikhen.
From top to bottom	Wánikhen hutim bong.

* "In," the locative, has 2 forms, bé and é or hé. Wathé = wathi-he and minhe = mini-he, in that. So wanhe = wani-he in the top. Again, in the hand, eye, head, fire, is bé; gotbe, mekbe, puchhibe, mebe. In the house is kemé and in the tree singphum-é. The present gerund has hé, phit-he. Also nung, phit-nung. The words for place and time or "lung" and "sing" cannot be used with pronouns, only with verbs (mu-lung = place of sitting; lok-sing = time of rising); and hence now and then, here and there, are but in this or that. There is no real difference between the two. The inflective signs ni and nung are equally applicable to both.

† Mini or Minung lomkhen and Wathim lomkhen are the inflected phases of the term. They are as usual and more correct.

Under, by under way	Hutikhen. Kudi kha.
Over, by the top	Wánikhen. Kha khakha.
Towards	Rek.
Upwards, towards the top	Wánim rek.
Downwards, towards the bottom	Hutim rek.
Between, in the midst	Mádumbe. Madumna.
From between	Madum khen.
By the middle	Mádum na.
By the midway	Mádum lom.
On the right	Jájá be.
On the left	Khánja be.
From the right	Jájá khen.
From the left	Khánjá khen.
Towards the right	Jájá rek.
Towards the left	Khánjá rek.
Out	Tong ma.
In	Bhitari.
Through	Thekthekha (crossing). Kudikha (undering).
Across	Madumna (midways). Khak khakha (overtoping.)
On this side	Imba.
On that side	Hómba.
On both sides	Imba homba.
From this to that side	Imba khen homba bong.
Round	Vinvinha.
Before	Honko.
Behind	Nungna.
Aside, at, or on the flank	Khukbe.
To the side	Khukrek.
By the side	Khukkhen.
Face to face	Kakpháng.
Opposite	
Abreast	Chelchelha. Kwongha.
Straight	Kakpháng.
Onwards	Chyeng chyeng ha.
Forwards, on	Honko.
Backwards, back	Nongna.

Adverbs of manner, cause, quality, quantity, &c.

How?	Hágna. Hágnáhá. Hánung báha.
Thus, in this way	Imhá. Inung báha.
Thus, in that way	Mimhá. Minung báha.
Why?	Mischepá.
How much?	Háthá. Hayung, n.
How many?	Hakpu, m. f.
As much	Hátha. Háyung.
So much	Mitha.
As many	Hakpu, m. f.
How often?	Háthápha. Hakphi.
How great?	Hátha honta.
How small?	Hátha. Cho'mi ithijila.
Well, rightly	Bingchoha. Bincho báha.
Ill, badly	Máng bingchoha. Máng bingcho báha.
Neither well nor ill	Bing chole má. Máng bing chole má.
Wisely	Sit'sit'ha Juk'juk'ha.
Foolishly	Máng sitsithá. Máng jukjukhá.
Hungrily	Suksa met'met'há.
Thirstily	Tidaksa met'há or met-met'há.
Angrily	Risihá. Risi not'ha. Risibukbukha.

Gladly	Bongbongha.
Joyfully	Bongnibong.
Willingly	Yot'yot'ha. Yot'ni yot'. Thumha. Thumsengha.
Unwillingly	Máng yot'yot'há. Máng thumha. Máng yot ni yot. Máng thumsengha.
Strongly	Chotibá.
Weakly	Máng chotibá.
Gently	Pomha. Pomhana.
Noisily	Tamtamha. Tamnitam.
Silently	Giwonha.
With blows	Topnitop.
Evenly, straightly	Chyengchyengha.
Unevenly, crookedly	Kwonchyángving chyángha.
Much, a great deal	Chhing gnák.
A little	Yáng gnák.
Neither more nor less	Chhing gnák le má yánggnák le má.
More	Khapkhapha.
Most, very much	Chhinggnák khapkhapha.
Less	Yáng yáng ha.
Least, very little	Chhing gnák yáng yáng ha.
Again (afresh)	Gessa.
Back (the same)	Liplipha.
Thoroughly	Chhinggnák.
Completely	Khulupha.
Partially	Ithi.
By halves	Phakha.
Heavily	Lid'lid'ha.
Lightly	Oksangha.
Tightly	Khwát'khwat'ha.
Slackly	Woso-woso-ha. Woso báha.
Greatly Increasingly	Chhinggnakha.
Trivially Decreasingly	Yánggnákha.
In cowardly way	Ramram ha.
Boldly	Máng ramram ha.
Modesty	Khot'khot'há.
Impudently	Máng khot'khot'ha.
Secretly	Khita báha. Khit'khit'ha.
Openly	Khunta báha. Khun-khunha.
Hastily	Plak plakha. Waliga.
Slowly	Gat'gat'ha. Pomhana.
Jestingly	Wásong pápáha. Wásong pánipá.
Seriously	Diksa pápáha.
Mortally	Met'bong.
Skin deep	Kokchho bong.
Together	Kolube.* Ko'na.
Separately	Gege gege.
Singly	Kwongpu kwongpu, m.
One by one	Kolu kolu, n.
Solitarily	Chhále chhále.
A foot	Khokkhokha.
On horse back or mounted	Changchangha.
Truly	Diksa pápáha.
Falsely	Máng diksa pápáha.

* Kolube, literally in one, means in one place. Lung, the affix of place can be used only with verbs.

Similarly	Tot'tot'ha. Kolu báha.
Differently	Máng tot'tot'ha. Máng kolu báha.
Look upwards, up	Lonkha chusto.
Look downwards, down	Yonkha chusto.
Look forwards	Kakphang chusto. Honko chusto.
Look backwards	Nongma chusto.
Look here and there	Itha dokha chusto.

Collectives.

5. Kolu got' khulup, = one hand intire, or 5 fingers.
10. Náyung got' khulup, = two hands intire, or 10 fingers.
15. Náyung got' khulupha kolu got' khulup = two hands, plus one hand. Náyung got' khulupha bá khulup, = two and half (bá) of the whole hands.
20. Le got' khulup = hands and feet or fingers and toes complete.
20. Cholók = a score, also kolu cholok.
40. Náyung cholok = two score.
60. Chhayung cholok = three score.
80. Blining cholok = four score.
100. Uning cholok = five score or, Kolu got' cholok = one hand of scores.

Ordinal Numbers.

There are none such. No first, second, third, &c.

Adverbial Numbers.

No firstly, secondly, thirdly, &c.

Once	Kóphi.	And so on to 100 by adding "phi," a turn or bout, to the numerals.—The interrogative particle "ha" can be similarly used. How many times? Há-k-phi. Phi is the crude of the verb to come, thus Kó-phi = one coming, &c.
Twice	Nakphi.	
Thrice	Chhúkphi.	
Four times	Blikphi.	
Five times	Kolugot khulup-phi.	
Ten times	Náyung got khulup phi.	
Twenty times	Le got khulup phi or cholop phi.	

Numeration of weights.

1. Koti.
2. Nakti.
3. Chhukti.
4. Blik ti.
5. Ukti or Kolu got khulup ti.

Numeration of days.

1. Ko buk'.
2. Na buk'.
3. Chhu buk'.
4. Bli buk.'
5. Ubuk, or Kolu got khulup buk.'

Remark.—The last are declinable like the others and may be regarded as compound substantives, which should therefore in strictness be put in the locative case, thus kophe phíne, come ye all at once. But this nicety is little regarded and kophinakphi la'lam is = he went once or twice. So Newári has as the equivalents of the above chha ko lang wá and chhákо niko wana. In general the adverbs, when not gerundial, are subject to declension like the nouns.

Declensional signs.

G.	Mu, ni, nung, Ni and nung to pronouns only. If two substantives come together, the sign is usually omitted.
D.	None.
Ac.	None.
Abl.	Khen, with inflexion if pronoun.
Inst.	Há, without inflexion in any case.
Loc. } Soc. }	Bé, Hé. é. Both commonly used with; the latter, always if the governed word be pronoun.
——	Up to, as far as, Bong. With usually; always if pronoun.
——	Towards, Rek ditto ditto.
——	On, upon, Wanhe } ditto ditto.
——	Off, under, Huthe }

Váyu Prepositions.

At this time	Ithe (itha-hé)
At that time	Mithe (Mitha-he) Wáthe (wathi-he.)
At this place	Inhe (ini-he.) Itha.
At that place	Min-he (Mini-he). Dokha.*
In this year	Ithong-he.
In a little time, shortly	Omop, he.
By and by, after a little more delay	Ombe.
During, pending this year	Ithong not'he.
Pending his coming	Wáthimáng phitbong.
At home	Kém-é.
At our house	Angki keme.
In the house	Kémé.
In the wilderness	Ghári-bé.
In my hand	Ang got be.
In, at Darjiling	Darjiling-é.
Go into the house	Keme la'la or kem bhitar bekla.
In me, thee, him	Angbe, Ungbe, Minungbe.
Come into the house	Kem, bhitari bek'.
Go into the house	Kemmu bhitari bekla.
Go into the water	Tibe bekla.
Come out of the water	Ti khen lok'.
Inside the house	Kemmu bhitari. Kem bhitari.
Outside the house	Kemmu tongma.
Out of the house	Kem tongma.
Come from the outside of the house	Kemmu tongma khen bek'.
Come out from the house	Kem khen tongma lok.
Come out from inside or within the house	Kem bhitari khen lok'.
Go with me	Ang nung la'la.
Sit by me	Ang be musche.
Come near me	Ang khewa phi.
Sit beside me	Ang khuk be musche.
Sit on my knee	Ang bimli be musche.
Sleep in his bosom	A bimli be imche.
Put on my shoulder	Ang pháka be cho'ko.
Put in or on the fire	Me be tako.
Put on (above) the fire	Me wanhe tako.
Take from off the fire	Me wanikhen thosto.
Put on, upon, the table	Mech wanhe táko.
Take from off the table	Mech wanikhen thosto.
Get on the horse Mount the horse	Ghorabe chyánche.
Get off the horse Dismount from the horse	Ghora khen lische.
Put on the horse (goods)	Ghoramu wanhe (*or* senti be) táko.
Take from off the horse	Ghora wani (*or* senti) khen loko.
On the head	Puchhibe. Puchhi wanhe.
Under the feet	Le huthe.
Put cap on head	Puchhi be topi chupche. Puchhi wanhe topi chupche.
Put straw under thy feet	Ungle huthe-khisti táko.
From above the head	Puchhi wanikhen.
From below the feet	Le hutikhen.

* Itha dokha = idher udher; inhe, minhe = iháṉ, uháṉ or hither and thither and here and there; the first with less of rest and definiteness.

On the head	Puchhi wanhe.
Under the feet (touching)	Le huthe.
Above / Higher than the head (not touching)	Puchhi khenlonkha.
Beneath / Under / Lower than the feet (not touching)	Le khen-yonkha.
Above the mouth is the nose	Mukchhyu wanim rek cho'no : mukchhyu hutimrekrá.
Below the mouth is the chin	
To, up to, as far as	Bong.
As far as him	Inung-bong.
To, as far as, Nepal	Nepal bong.
Towards Nepal	Nepal rek.
North of Nepal	Nepal khen liriphumbe.
Near Nepal	Nepal khewa.
Far from Nepal	Nepal khen kholám.
Towards night	Eksa dumhe.
Cruel toward his children	Ang tamtawo rek yánsa povi.
Sit above me	Angkhen lonkha musche.
Sit below him	Minung khen yonkha* musche.
Between us two	Ungchi mádumbe.
On me (touching)	Ang wanhe.
Under me (touching)	Ang huthe.
The water comes from above and goes below	Lonkhá rek khenti yumi, yonkha rek giklam.
On the top of the hill	Chháju puchhibe wanhe.
In the mid ascent of the hill	Chháju madumbe.
At the base of the hill	Chháju phumbe huthe.
From top of hill	Chháju wanikhen.
From middle of hill	Chháju madumkhen.
From base of hill	Chháju hutikhen.
He dwells above me	Ang khen lonkha muschem.
He dwells below me	Ang khen yongha muschem.
Sit on me	Ang wanhe musche.
Pressed under me	Ang huthe napta.
Underneath the chair	Chouki huthe.
Lower than the chair (in position)	Chouki khen yonkha.
Put under the table	Mech huthe or hutibe táko.
Take out from under the table	Mech hutikhen thosto.
Go through the door	Kámung khen lokla.
Go through the hole	Hom kuḍikha, or Hom madumbe thekla.
Go through the river (wading)	Gang thek thekha la'la.
Go over the river (by boat)	Gang thek thekha la'la.
Go over (by over) the couch	Khát lumlumha la'la.
Go under (by under) the couch	Khát homlung khen lok'la or kuḍikha la'la.

* Lonkha and yonkha refer mainly to the course of the water in this mountain country and to relative position on a hill slope.

Come with me	Ang nung phi.
Go without me	Ang má nosa la'la.
Strike with force	Chotiba to'po.
Strike without force	Choti máng khot'khot'ha to'po.
Sit before me	Ang honko musche.
Sit behind him	Anungna musche.
Before-behind the door	Kámung-honko-nungna.
Opposite, in front of, vis-a-vis	Kakpháng.
Sit at my side on my flank	Ang khuk be musche.
Towards the side	Khuk rek.
Before night fall	Eksa mádumsa.
After night fall	Eksa dumkhen. Eksa dumdumha.
At night fall / Just as night falls	Eksa dumhe.
Since dawn	Nomoloksing khen.
Since I came	Ang phit' khen.
After my arrival	Ang dong khen nungna.
After to-morrow	Nukun khen.
By night fall / Up to-night / Until night	Eksa bong. Eksa dum bong.
Towards night	Eksa let'he.
Towards dawn	Dang dang dumhe.
At dawn	Nomo lokhe.
During the night	Eksa nung.
While it was night	Eksa not'nung.
By the time I arrive	Ang dongsinghe.
Before my arrival	Ang dong singkhen honko.
After my coming	Ang dong singkhen nungna.
Round about the house	Kemmu thelim phoksit'.
About the house	Kemkhukhe itha dokha.
In the middle of the village	Mulungmu mádumbe.
On this side the river	Gangmu imba or Gang imba.
On that side the river	Gang homba.
He pierced him through the body	Chho chepchepha sastum.
Go by the door	Kámung lomkhen la'la.
At a distance from the house	Kem khen kholám.
Near to the fire	Mé khewa.
Near me	Ang khewa.
After that	Minung nongna.
Before that	Wáthím honko. Minung honko.
Instead of that	Inung let'chhing.
In lieu of him	Inung jyapchhing. Minung jyapchhing.
For the sake of me	Ang lisi. Ang duli khen.
For the love of me	Gochhan chhanha.
On this side of, short of, not so far as, the house	Kem khen imba or Kemmu itha.
On that side of, or beyond the house	Kem khen homba or Kemmu dokha.
Far from the house	Kem khen kholám.
With a house, i. e. having	Kem not'he or got'he. Kem not'nam. Kem not'khen.
Without a house, wanting	Kem máng not'he. Kem máng nosa. Kem máng not'khen.
With me accompanying	Ang nung.
Without me leaving	Go wat'wat'ha, Angmá nósa.

For the purpose of, on account of, the house	Kem lisi.
In the middle of the house	Kem má dumbe.
Even with the table, on level with table	Mech nungteng tengha.
Through the house	Kem kuḍikha. Kemmu mádumna or mádum khen.
Through the thigh	Phekteng sat'sat'ha or mádumna.
With a will (Bòngrè)	Bong ni bong. Bongbonghá. Bonghá.
Without, against the will (Màlgrè)	Máng bongbongha. Máng bongha.
Willy, nilly	Bongha máng bonghá
In spite of her husband	Rocho máng-honhonha.
For the love of her husband	Rocho chhan-chhan'ha.
After the manner of the Newars	Hengong-wo báha.
In the form of a fish	Ho nárungmu.
After the manner of the Tibetans	Chhogongwo báha.
In the guise of a Tibetan	Chhogongwo narungbe or nárunghá.

Conjunctions.

And	No such word.
Also, likewise	Lé. Nung.
Or	No word. Ki is used.
Nor	Máng (not.)
Nor this, nor that	Ï máng, mú máng.
Moreover	Mekhen.
Besides	Wánikhen.
In excess of	Wanhe.
Than (comp.)	Khen.
As	Hágnado.
So	Mimha.
As, so	Ímha. Mimha.
As well as	Hágnado noh'ka
As ill as	Hágnado máng noh'ka.
But	No word.
Nevertheless Notwithstanding	No word.
Though, yet	Mithele.*
If	Sa. Nam, with present tense. Phen† with preterite.
If not Unless Except	Can only be used with a verb; máng nosa, if there be not. Mápo nam, if he do not.
Whether or not	Nole má nole.
In the meanwhile	Íthe.
Thereon, upon that	Mithe.
To wit, that is to say	Id'he. It'he.
Because Since As	Mischepá.
Wherefore For this cause	Ipánung.

* Passionate yet good; or, though passionate (he is) not harsh or cruel, Risiwo mithele noh'ka, or Risibuk'vi mithele yánsa máng povi.

† If I come or shall come Phignonam. If I had come Phisung phen.

Therefore	Mipánung.
For that cause	Wáthi pánung.

Yes (assent)	No words.
No (dissent)	
Verbal negative	Máng (prefix.)
Verbal prohibitive	Thá (prefix.)
Noun primitive	Máng. Má (prefix).
Alas!	No words.
Bravo!	
Hurrah!	

Váyu Verbs.—Vocabulary.

English.	*Váyu.*
Cause, tr.	Phá-(s)-to. Pingko (see on).*
Cause not	Thaphá-(s)-to. Thá ping.
Be born, n.	Bok.'
Cause him to be born, tr.	Bok ping ko.
Cause thyself to be born or to be born for thyself	Bok pingche.
Cause me to be born, &c.	Bokpingsung
Beget or give birth to	Pho'ko (Phok-ko).
Beget or produce me, or for me	Phoksung.
Beget or produce for thyself	Phokche.
Beget for another	Phokto.
Cause to beget or to be begotten, or produced	Phokpingko.
Cause thyself to beget, or to be begotten for thyself	Phok pingche.
The same for another	Phokpingto.
Cause me to beget or to be begotten	Phok pingsung.
Be not born	Thá bok'.
Cause not to be born	Bok' thá ping.
Beget not or give not birth to	Thá phok'.
Beget not for self	Thá phokche.
Beget not for another	Thá phokto.
Beget not for me	Thá phokgno.
Live, n.	Gó.
Live not	Thá gó.
Cause him to live	Got'pháto (phasto.) Got'pingko.
Cause me to live	Got'pingsung. Got'phassung.
Cause thyself (or for thyself) to live	Got'pingche. Got phasche.
Cause to live for him, for his sake	Gotpingto. Got phasto.
Do not cause to live	Got thá phá'to. Got thá ping.
Do not cause thyself to live	Got thá pinche. Got thá phásche.
Die, n.	Met'.
Die not	Thá met'.
Cause to die	Met'pingko.
Enable to die	Met'phá'to (phasto.)
Cause thyself to die	Met'pingche.
Cause me to die	Met'pingsung.

* These two verbs are used to make causals. Pingko and Phásto are often identical, at other times more or less discriminated in a way that may be best appreciated by a sample, thus Khut pingko is, cause to steal, and Khut phasto, make a thief of.

Cause not to die	Met' thá ping. Met' thá phá'to.
Cause not thyself to die	Met' thá pinche. Met' thá phasche.
Kill, tr.	Sishto.
Kill thyself or for thyself, or do thou thyself kill, int.	Sishche.
Cause to kill or be killed	Sit' pingko.
Cause thyself to kill or to be killed, or to be killed for thyself	Sit' pingche.
Cause him to klil or be killed for another	Sit' pingto.
Kill me or for me	Sishsung.
Kill me not or do not kill for me	Thá sit gno.
Cause me to kill or be killed, or for me	Sit pingsung.
Cause not, &c.	Sit thá pinggno.
Be, n.	Nó.
Be not	Thá nó.
Cause to be	Not' pingko.
Cause to be for self	Not' pingche.
Cause to be for me or me to be	Not' pingsung.
Cause it to be for him	Not' pingto.
Do not cause to be	Not' thá ping.
Do not cause me to be or it to be for me	Not' thá ping gno.
Become, n.	Dum.
Become not	Thá dum.
Cause to become	Dum pingko. Thumto.
Cause to cause to become	Thum pingko.
Cause me or for me to become	Thum sung.
Cause thyself or for thyself to become	Thumche. Dum pingche.
Be able, ac. intr.	Phásche. Wonche.
Enable, tr.	Phá'to. Phásto. Wanto.
Cause to be able or to enable	Phát piugko. Won pingko.
Do, perform, make, tr.	Páko.
Do not	Tháp̄o.
Do for me	Pásung.*
Do not for me	Thá págno.
Do for self	Pánche.
Do not for self	Thá pánche.
Do for him	Páto.
Do not for him	Thá páto.
Do me, passive	Posung.*
Do self (see grammar).	Ponche.
Cause to do or to be done	Pápingko.
Cause me to do or to be done to me or to do or be done for me	Pápingsung.
Cause thyself to do or be done to or for thyself	Pápingche.
Cause to do or to be done to, for another	Pápingto.
Keep doing, intr.	Pánapá nó. Pápáha musche.
Cease doing. Desist, intr.	Wásche.
Cease doing it, tr. Desist from it	Wá' (s) to.
Suffer, endure } bodily Submit thyself } bodily	Rouche. } These two reflex verbs serve
Brace thy mind to sufferance	Wonche. } to convey the only and very vague idea of passivity.
Observe, take heed of, examine, think, intr.	Chusche. Chikche.

* See remarks on the verbs Páko, Táko and Jáko.

English.	*Váyu.*
Observe it, take heed of it, think of it, tr.	Chuphto (Chusto.) Chikto.
Observe me or for me	Chussang. Chiksung.
Cause to observe or to observe it, or it to be observed, tr.	Chut pingko. Chik pingko.
Cause to observe or to be observed for thyself or thyself, intr.	Chut pingche. Chik pingche.
Cause me to observe or me to be observed, quasi passive	Chut pingsung. Chik pingsung.
Understand, intr.	Sesche.
Understand it, tr.	Seko.
Cause to understand or to be understood	Set'pháto (phasto.)
Understand me or for me*	Sesung (Sessung.)
Understand thyself or for thyself or simply understand	Sesche.
Understand it for him or on his account	Sesto.
Understand not	Thá sesche.
Understand it not	Thá se.
Remember, intr.	Chikche.
Remember it, tr. (see observe)	Chikto.
Remember not	Thá chikche.
Remember it not	Thá chikto.
Do not cause to remember or to be remembered	Thá chik phá'to (phásto).
Forget, intr.	Mángche.
Forget it, tr.	Mángto.
Forget me or for me	Máng sung.
Forget me not	Thá máng gno.
Forget thyself (= err.)	Mángche.
Forget not thyself or do not thou forget	Thá mángche.
Forget him or it	Mángto †
Forget him not	Thá mángto.
Cause to forget (= deceive) or to be forgotten	Máng pingko. Máng phá'to (phasto).
Cause me to forget or to be forgotten	Máng pingsung.
Cause thyself to forget or to be forgotten	Máng pingche.
Cause him to forget or to be forgotten on a third party's account, or cause it to be forgotten by him	Máng pingto (pingkto). (Doubly objected transitive)
Desire, n. and p.	Dak.‡
Desire it or make him desire	Dakto.
Cause to desire or to be desired (per alterum, hand per se)	Dak pingko. Dak phá'to (phasto).
Do not cause to desire or to be desired	Thá dak ping. Thá dak phá'to (phásto).
Cause me to desire or be desired	Dak pingsung.

* The word, when used in the latter sense, *with* lisi, on account of, is frequently put in the transitive form ang lisi seko, understand it for me. The alternative results from the imperfect development of the voices.

† Compare the transitive and causal transitive. Verbs in tó have no form = Sénto, Páto, &c. or the transitives in ko. The transitives in pó have this form, thus topo has topto; ipo, ipto; pipo, pipto, &c.

‡ Dak, like Bot: tell, is used rather as a passive than active. Its form is passive; its sense both apparently. Dak gnom I desire or am desired. Daksung-mi I desired or was desired. In Khas, Newari, &c. it is much the same.

English.	*Váyu.*
Cause thyself to desire or be desired	Dak pingche.
Cause him to desire or be desired on another's account, or him to desire it	Dak pingto (pingkto)
Love or love it, trans.	Chhánto.
Love thyself or love simply, intr.	Chhánche.
Love me, p.	Chhánsung.
Love him, tr.	Chhánto.
Love not	Thá chhánche.
Love not it or him	Thá chhánto.
Cause to love or to be loved	Chhán phá'to. Chhán pingko.
Cause me to love or to be loved	Chhán pingsung. Chhán phásung.
Cause thyself to love or be loved	Chhán pingche. Chhán phásche.
Cause him to love or be loved on another's account	Chhán pingto. Chhán phá'to (phásto).
Hate or hate it, trans.	Chekto.
Hate thyself or hate simply, intr.	Chekche.
Hate me, p.	Cheksung.
Hate him or for him (see note voce forget)	Chekto.
Cause to hate or to be hated	Chek phá'to. Chek pingko.
Cause thyself to hate or be hated	Chek pingche. Chek phásche.
Cause him or it to hate or be hated for another's sake, or him to hate it	Chek pingto. Chek phásto.
Be modest, n.	Khó.
Cause to be modest	Khót' phá'to (phasto).
Laugh, ac. intr.	Yische.
Laugh at, Iride, { tr.	Yishto.
Cause to laugh	Yit'phá'to (phásto).
Weep, n.	Ok.
Weep for, tr.	Okto.
Cause to weep	Okphá'to (phásto).
Dance, intr. and tr.	Holi páche, intr. Holi páko, tr.
Sing, intr. and tr.	Kwom páche, intr. Kwom páko, tr.
Hope	No such word.
Fear, n.	Ram.
Fear not	Thá ram
Frighten, tr.	Ram pingko. *Kh*am to (Arabic kh).
Frighten not	Ram thá ping. Thá *kh*am to.
Frighten me	Ram pingsung. *Kh*amsung.
Frighten thyself	Ram pingche. *Kh*amche.
Cause to frighten or be frightened	*Kh*am pingko.
Cause me to frighten or to be frightened	*Kh*am pingsung.
Cause thyself to frighten or be frightened	*Kh*am pingche.
Cause him or it to frighten or be frightened for another's sake	*Kh*am pingto.
Tremble, ac. intr.	Hokche.
Cause to tremble by own act or make him tremble, tr.	Hokto.
Cause to tremble through another's agency or cause him to be made or to make to tremble	Hok pingko.
Tremble not	Thá hokche.
Make him not tremble	Thá hokto.
Cause him not to be made to tremble or to make tremble	Hok thá ping.
Be good, n.	Noh'ka dum or ponche.
Make good, tr.	Noh'ka thumto or pako.

English.	*Váyu.*
Make thyself good, intr.	Noh'ka thumche or pánche.
Be glad or gladden thyself, ac. intr.	Bongche.
Gladden, tr.	Bongto.
Gladden me	Bongsung.
Gladden thyself or cause thyself to be gladdened	Bong pingche.
Cause him to gladden or to be gladdened	Bong ping ko.
Cause him to gladden or to be gladdened on another's account	Bong ping to.
Cause me to gladden or to be gladdened	Bong pingsung.
Be not glad	Thá bongche.
Gladden not	Thá bongto.
Be sad, vexed or sadden thyself	Thukche.
Sadden, vex, tr.	Thukto.
Cause to sadden or to be saddened	Thuk phá'to. Thuk pingko.
Cause thyself to be saddened	Thuk pingche.
Cause to sadden or to be saddened in lieu of or on another's account	Thuk ping to.
Cause not, &c. &c.	Thuk'thá pinn. Thuk thá ping to.
Speak, utter, n.	Hot'. Dávo pánche.
Utter not	Thá hot.' Dávo thá pánche.
Utter thyself or for thyself, intr.	Hosche (the s like English th.)
Do thou not utter for self	Thá hosche.
Utter in lieu of another, or for him	Hophto (Hosto.)
Utter not for him	Thá hophto (hosto.)
Cause to utter or to be uttered	Hot' pingko.
Speak to, tell, narrate, talk to, tr.	Ishto. Chhisto. Dávo páko.
Speak to me, tell me or for me	Ishsung. Chhishsung. Bo'sung.* (Bo'to, the transitive is lost.)
Speak to thyself or tell it for thyself	Ishche. Chhishche.
Cause to tell or to be told	It'pingko. Chhit'ping ko. Dávo páping ko.
Cause not to tell or not to be told	It thá ping. Chhit thá ping. Dávo pá thá ping.
Tell on his account, tell his tale	Dávo páto.
Tell on my account, tell my tale	Dávo pásung.
Let speech be had	Dávo ponche.
Tell on your own account, tell your own tale	Dávo pánche.
Cause his tale to be told for him	Dávo pá pingto.
Cause thy own tale to be told	Dávo pá pinche.
Cause my tale to be told	Dávo pá pingsung.†
Be silent or let silence be, n.	Giwon ponche.
Silence, tr.	Giwon páko.
Cause to silence	Giwon pá pingko.
Silence me	Giwon posung.‡
Silence thyself	Giwon pánche.
Silence him on another's account or for another	Giwon pato.

* This last root, bot' to tell, is only used as a passive. Bot'gnom, I am told. Bosungmi, I was told.

† All theae three are used actively also. Cause him to tell his tale. Cause thyself to tell thine. Cause me to tell mine.

‡ Compare Dávo pásung. This refers to the agent, do thou make speech for me, whereas Giwon posung refers to silence as governing the verb, let silence prevail for me. See remarks on the verbs Páko, Táko and Jáko. They show signs of a true passive struggling into existence against the genius of the language.

English.	*Váyu.*
Call. Summon, tr.	Rángto. Khámto.
Summon me or for me	Rangsung. Khamsung.
Summon for thyself	Rangche. Khamche.
Shout, vociferate, intr.	Tamche. Sángma-panche.
Shout to, for him	Tamto. Sángma-páko.
Learn (= teach thyself,) intr.	Lishche.
Teach or teach him, tr.	Lishto.
Read, intr.	Lische. Lishche.
Write it, tr.	Blekto
Write for thyself or write simply	Blekche.
Cause to write	Blek pingko.
Ask, question, tr.	Jiko.
Ask for self, or ask simply, or ask thyself	Jiche.
Ask for me, or me	Jisung.
Ask it for him	Jito.
Ask it not, tr.	Thá ji.
Ask not, intr.	Thá jiche.
Ask not for me or me	Thá jigno.
Ask not for self	Thá jiche.
Ask not for him	Thá jito.
Answer or answer him, tr.	Chhisto.
Answer self or for self or answer simply	Chhische.
Answer me or for me	Chhissung.
Answer him, or for him	Chhisto.
Beg, intr.	Biche (see Buy).
Beg it, tr.	Biko.
Beg me or for me, p.	Bisung.
Beg for thyself, intr.	Biche.
Beg it for him, tr.	Bito.
Approve, like, intr.	Yosche.
Approve it, like it, tr.	Yophto (Yosto).
Cause him to approve or to approve it, or it to be approved	Yot'phá'to. Yot'pingko.
Approve not	Thá yosche.
Approve it not	Thá yot'.
Approve me or for me	Yossung.
Approve thyself or for thyself	Yosche.
Approve him or approve for him	Yophto (Yosto).
Cause me to approve or be approved	Yot'pingsung.
Cause thyself to approve or to be approved or cause it to be approved for thyself	Yot'pingche. Yot'phásche.
Cause it to be approved or cause him to approve it	Yot pingko.
Cause it to be approved for him	Yot pingto.
See, intr.	Yengche. Chusche.
See it, tr.	Yengko. Chuphto (chusto).
See thyself or for thyself	Yengche.
See for him	Yeng to.
See me or see for me	Yengsung.
Cause to see or be seen	Yeng phá'to. Yeng pingko.
Cause thyself to see or be seen, or to be seen for thyself	Yeng pingche.
Cause to see or be seen for him	Yeng pingto.
Show, intr.	*Kh*unche.*
Show it, tr.	*Kh*unto.

* The underlined *Kh* has a harsh Arabic sound.

English.	*Váyu.*
Show me or for me	*Khu*nsung
Show thyself or for thyself	*Khu*nche.
Show for him	*Khu*nto.
Cause to show or be shown	*Khu*n pingko. *Khu*n phá'to.
Cause thyself to be shown or to show	*Khu*n pingche.
Cause me to be shown or to show	*Khu*n pingsung.
Hide, ac. intr.	Kinche.
Hide it, tr.	Khiko.
Hide thyself (lie hid)	Kinche.
Cause thyself to lie hid	Kin pingche.
Let me hide myself	Kin sung yu.
Cause him to lie hid	Kin pingko.
Cause me to lie hid	Kin ping sung.
Cause it to be hid	Khit'pingko.
Cause thyself to be hidden or cause it to be hidden for thee	Khit'pingche.
Hide me	Khisung.
Cause me to be hid	Khit'pingsung.
Cause it to be hid for him	Khit'pingto.
Hear simply or hear thyself, intr.	Thásche.
Hear it, tr.	Tháko.
Cause thyself to hear or be heard	Thát'pinche.
Cause him to hear or be heard	Thát'pingko.
Hear me	Thásung. Ang dávo tháko.
Cause me to hear or be heard	Thát'pingsung.
Hear not	Thá thasche.
Hear it not	Thá thá.
Hear not me	Thá thá gno.
Cause me not to hear or be heard	Thá thát'ping gno.
Taste, ac. intr.	Homche.
Taste it, tr.	Hompo.
Taste for thyself or thyself	Homche.
Taste for him	Homto.
Taste for me or taste me	Homsung.
Cause to taste or to be tasted	Homping ko.
Blow, apply breath, intr.	Hosche.
Blow it, apply breath to it, tr.	Hosto.
Smell, ac. intr.	Námche.
Smell it, tr.	Nápo (Nampo).
Smell for thyself or thyself	Námche.
Smell for him	Námto.
Smell me	Námsung.
Cause to smell or to be smelt	Námping ko.
Cause to smell or to be smelt for him	Námping to.
Smell not	Thá námche.
Smell it not	Thá nám.
Smell me not	Thá ná (m) mo.
Cause me to smell or be smelt	Námpingsung.
Cause thyself to smell or be smelt	Námpingche.
Touch, ac. intr.	Dusche.
Touch it, tr.	Duphto (Dushto).
Cause to touch or to be touched	Dut'ping ko.
Cause thyself to touch or be touched	Dut'pingche.
Cause it to touch or be touched for him	Dut'ping to.
Touch me or for me	Dú (s) sung.
Touch me not	Thá dut'gno.
Eat, ac. intr.	Jánche (see buy).
Eat it, tr.	Jáko.
Eat not	Thá jánche.

English.	*Váyu.*
Eat it not	Thá jó.
Eat me	Josung (see posung).
Eat for me	Jásung.
Eat for thyself or do thou thyself eat, or eat thy own share	Jáṇche.
Eat for him or eat his share	Játo.
Eat not me	Thá jogno
Eat not for me	Thá jágno.
Feed, tr.	*Kh*wá (s) to*
Feed thyself, intr.	*Kh*wásche.
Feed not, tr.	Thá *Kh*wát'.
Feed thyself not	Thá *Kh*wásche.
Feed me	*Kh*wá (s) sung.
Feed me not	Thá *Kh*wat'gno.
Cause to feed or to be fed	*Kh*wát' pingko.
Cause thyself to feed or be fed	*Kh*wát pingche.
Cause it to feed or be fed for him	*Kh*wát pingto.
Cause me to feed or be fed	*Kh*wát pingsung.
Drink—water	Ti dak'.
Drink not—water	Ti thá dak'.
Cause to drink or to be drank water	Ti dak'pingko.
Cause not to drink or be drank water	Ti dak'tháping.
Drink—beer, spirits, ac. intr.	Tuṇche.
Drink it, beer, &c. tr.	Tuṇko.
Drink not, beer, &c.	Thá tuṇche.
Drink it not, beer, &c.	Thá tuṇ'.
Cause to drink or to be drank	Thuṇto or Tuṇpingko.
Cause to cause to drink or to be drank	Thuṇpingko.
Don't cause to drink	Thá thuṇto.
Don't cause to cause to drink or be drank	Thuṇ tháping.
Don't cause to cause thyself to drink or to be drank	Thuṇ thápingche.
Don't cause him to drink it, or it to be drank by him in lieu of another	Thuṇ thápingko.
Drink me	Tuṇ sung.
Drink not me	Thá tuṇ gno.
Cause me to drink or to be drank	Thuṇsung,
Cause me not to drink	Thá thuṇ gno.
Vomit, ac. intr.	Lipche.
Vomit it, tr.	Lipto. Li'po.
Cause to vomit	Lip'pingko.
Sleep, ac. intr.	Imche.
Sleep not	Thá imche.
Cause to sleep	Im pingko. Hempo.
Cause not to sleep	Im thá ping. Thá hem.
Cause thyself to sleep	Hem che.
Help to put him to sleep	Hem to.
Help to cause him to be put to sleep	Hem ping to.
Cause thyself to be put asleep	Hem ping che.
Wake, n.	Buk'. Sipche.
Wake not	Thá buk'. Thá sipche.
Awaken, tr.	Po'ko or Pu'ko.† Sipto.
Awaken not	Thá puk'. Thá sipto.
Cause to awaken or to be awakened	Puk'pingko. Sip pingko.

* *Kh* = harsh guttural Arabic.

† O and u, like e and i, are hardly separable.

English.	*Váyu.*
Cause thyself to be awakened or to awaken	Puk'pingche.
Cause me to be awakened or to awaken	Puk'pingsung.
Awaken me	Puk'sung.
Awaken me not	Thá puk'gno.
Awaken thyself or do thou thyself awaken him	Puk'che.
Awaken for him	Puk'to.
Awaken not for him	Thá puk'to.
Dream, intr.	Ámung yengche.
Dream it, tr.	Ámung yengko.
Dream not	Ámung thá yengche.
Dream it not	Ámung thá yeng.
Cause to dream or to be dreamt	Ámung yengping ko.
Cause thyself to dream or be dreamt of	Ámung yengping che.
Fart, ac. intr.	Peshche.
Fart at, tr.	Peshto.
Shit, n.	Dak'. Epidak.
Shit it upon it, tr.	Dakto. Epidakto.
Piss, minge, intr. n.	Chepidak. Cheche.
Piss it, on it / Immingе } tr.	Chepidakto. Cheto.
Kiss—give or take (osculor), tr.	Chugup páko.
Cause to kiss or be kissed	Chugup páping ko.
Cause thyself to kiss or be kissed	Chugup páping che.
Kiss me	Chugup posung.
Kiss me not	Chugup thá pogno.
Kiss him for me	Chugup pásung.
Kiss him for him	Chugup páto.
Kiss (coe), tr.	Hepto.
Cause to kiss or be kissed	Hep pingko.
Cause thyself to kiss or be kissed	Hep pingche.
Kiss me	Hepsung.
Cause me to kiss or be kissed	Hep pingsung.
Kiss not	Thá hepto.
Kiss me not	Thá hepmo.
Sneeze, ac. intr.	Khikche.
Sneeze not	Thá khikche.
Sneeze at, or make sneeze	Khikto. Khi'ko.*
Do not sneeze at or make sneeze	Thá khikto.
Cause him to sneeze at or him to be made or to make to sneeze	Khik pingko.
Cause not, &c.	Khik thá ping.
Do thou make me sneeze, &c.	Khiksung.
Cause me to be made to sneeze, &c.	Khik pingsung.
Do not sneeze at me or do not make me sneeze	Thá khikgno.
Cause thyself to be made to sneeze, &c.	Khik pingche.
Cause not thyself to be made to sneeze or to sneeze or be sneezed at	Khik tháping che.
Spit, ac. intr.	Tokche.
Spit at, on, tr.	Tokto. To'ko.*
Cause to spit or to be spat at	Tok pingko.

* Khi'ko and To'ko like Li'po, vomit it, are falling out of use because of the homophones. But they are the true forms and the others refer to a third party. See the word exchange.

English.	*Váyu.*
Cause to spit or be spat at on another's account	Tok pingto.
Spit on me or make me spit	Toksung.
Cause me to spit or to be spat at	Tok pingsung.
Cause yourself to spit or to be spat on	Tokpingche.
Belch, ac. intr.	Garat pánche.
Belch at, tr.	Garat páko.
Cause him to belch or to belch at or to be belched at	Garat pápingko.
Belch me or for me	Garat posung.
Belch him or for him	Garat páto.
Cause me to belch or be belched at	Garat pápingsung.
Cause him to belch or to be belched at on another's account	Garat papingto.
Cough, ac. intr.	Khwen khwen pánche.
Cough at, tr.	Khwen khwen páko.*
Cough me, cause me to cough by own agency	Khwen khwen posung or pásung.*
Cause me to cough or to be coughed at through another's agency	Khwen khwen papingsung.
Cause thyself to cough or to be coughed at through same	Khwen khwen pápingche.
Hiccup, ac. intr.	Tukum pánche.
Yawn, intr., tr.	Wakum pánche, intr. Wakum páko, tr.
Cause to yawn	Wakum pápingko.
Cause me to yawn	Wakum pápingsung.
Cause thyself to yawn	Wakum pápingche
Do thou thyself cause me to yawn	Wakum posung. Wakum thá po.
Do not thou cause me to yawn	Wakum thápogno.
Yawn not, intr. and tr.	Wakum thá pánche.
Lick, ac. intr.	Popche.
Lick it, tr.	Po'po.
Cause to lick or be licked	Pop pingko.
Lick me or for me	Popsung.
Lick thyself or for thyself	Popche.
Lick it for him	Pop to.
Cause me to lick or be licked	Pop pingsung.
Cause thyself to lick or to be licked	Pop pingche.
Cause him to lick or be licked	Poppingko.
The same, on account of, or in lieu of, another	Poppingto
Suck, a. intr.	Pipche.
Suck it, tr.	Pi'po (Pip-po).
Suck me or for me	Pipsung.
Suck thyself or for thyself	Pipche.
Suck it for him	Pipto
Cause to suck or to be sucked	Pip pingko
Cause me to suck or be sucked	Pip pingsung.
Cause thyself to suck or be sucked	Pip pingche.
Cause him to suck or be sucked	Pip pingko.
Bite, tr.	Chi'ko (chik-ko).

* Hence you can say in active intransitive khwen khwen pachungmi I coughed = I made myself cough; in the transitive, khwen khwen pakungmi I coughed at him, very often used "for I made him cough" which is properly khwen khwen páping-kungmi; and in the passive, khwen khwen posungmi I was coughed = was made to cough, which latter is more nicely expressed by khwen khwen pasungmi shewing also the active agency.

English.	*Váyu.*
Bite not	Thá chik'.
Cause to bite or to be bitten	Chik pingko.
Cause not to bite or be bitten	Chik thá ping.
Bite me	Chik sung.
Bite me not	Thá chik gno.
Bite thyself	Chikche.
Bite him	Chi'ko.
Bite it for him	Chikto.
Cause me to bite or be bitten	Chik pingsung.
Cause me not to bite or be bitten	Thá chikping gno.
Cause thyself to bite or be bitten	Chik pingche.
Cause him to bite or be bitten	Chik pingko.
The same on another's behoof	Chik pingto.
Kick, tr.	The*sh*to (Eng. *th*).
Kick not	Thá thet'.
Kick me	Thé (s) sung.
Kick me not	Thá thet' gno.
Kick thyself or kick simply	The*sh*che.
Kick not thyself or do not kick	Thá the*sh*che.
Kick him	Theshto.
Kick him not	Thá thet'
Cause to kick or to be kicked	Thet' pingko.
Cause me to kick or be kicked	Thet' pingsung.
Cause thyself to kick or be kicked	Thet' pingche.
Cause him to kick or be kicked	Thet' pingko.
The same on another's behoof	Thet' pingto.
Strike, tr.	To'po (top-po).
Srike not	Thá top'.
Strike thyself	Top che.
Strike me	Topsung.
Cause him to strike or to be striken	Top pingko.
Cause thyself, &c.	Top pingche.
Scratch, tr.	Phokto.
Scratch thyself	Phokche.
Push, shove, tr.	Theko.
Push not	Thá thé.
Pull, tr.	Khinto.
Pull not	Thá khinto.
Walk, ac. intr.	Khokche.
Walk not	Thá khokche.
Walk it or cause it to walk, thou thyself	Khokto.
Walk it not	Thá khokto.
Cause to walk or to be walked by another's agency	Khok pingko.
Walk me thyself, cause me to walk or be walked, by thy own agency	Khoksung.
Cause to cause me to walk or be walked, or have me walked	Khok pingsung.
Cause thyself to walk or be walked or have thyself walked	Khok pingche.
Run, intr.	Lunlá. Lun.
Run not	Thá lunlá.*
Run it, cause it to run, thyself	Lunto.
Cause it to be run by another	Lunpháto.

* Lun without the lá makes the passive lungnom, which being also the neuter form, lun lagnom, from lunla, is preferred to express the neuter sense though lá also makes lagnom.

English.	*Váyu.*
Cause me to run or be run	Lunphásung.
Cause thyself to run or be run	Lunphasche.
Run away, flee, intr.	Rulá. Ru.
Cause to flee	Ruto. Rut'pingko.
Creep, intr.	Hobu báha khokche.
Jump, hop, intr.	Tuche.
Jump it or make it jump, tr.	Tuto.
Cause to make jump	Tupingko.
Leap, intr.	Hopche.
Leap it, tr.	Hopto.
Cause to leap	Hop pingko.
Fly, n.	Bon.
Cause to fly	Bonpingko.
Enable to fly	Bonpháto.
Swim, intr.	Hánche.
Swim it thyself or cause it to swim by, thy own account	Hánto.
Cause it, him, to swim by other's agency or have it swam	Hánpingko.
Swim me, cause me to swim or make me swim thyself	Hánsung.
Cause me to be or made to swim by another's agency.	Hánpingsung.
Cause thyself to swim or be swam	Hánpingche.
Wade, ac. intr.	Thekche.
Dive Sink } ac. intr. = sink thyself	} Thamche.
Sink it, make him dive, by thy own agency	Thamto.
Cause to make dive or sink by other's agency, or have it sunk	Thampingko.
Bathe = bathe thyself, intr.	Denche.
Bathe him	Dento.
Cause him to bathe or to be bathed	Denpingko.
Wash, intr. = wash thyself, only body	Upche.
Wash him	Upto.
Cause him to wash or to be washed	Up pingko.
Dress, ac. intr. = dress thyself	Chupche. Wásche.
Dress it	Chupto. Wásto.
Cause it to dress or be drest	Chup pingko. Wat'pingko.
Dress me	Chupsung. Wassung.
Dress thyself	Chupche. Wásche.
Undress (thyself), intr.	Lusche.
Undress it	Luphto (Lusto).
Undress me	Lussung.
Cause it to undress or to be undressed	Lut'pingko.
Don't undress it	Lut'thá ping.
Be naked, n.	Gunang senti dum or ponche.
Denude thyself, ac. intr.	Gunang senti pánche.
Denude him	Gunang senti páko.
Denude me	Gunang senti posung (pásung).
Denude it for another	Gunang senti páto.
Cause to denude or be denuded	Gunang senti pápingko.
Cause thyself to denude or be denuded	Gunang senti pápingche.
Cause me to denude or to be denuded	Gunang senti pápingsung.
Cause me not to denude or to be denuded	Gunang senti thá páping gno.
Be hungry, n.	Suksamet'. Suksametvidum.
Make him hungry or cause him to be made hungry	Suksa met'pingko not'pingko.

English.	*Váyu.*
Make me hungry or cause me to be made hungry	Suksa met'pingsung.
Make thyself hungry or cause thyself to be made hungry	Suksa met'pingche.
Be thirsty, n.	Tidaksa met', or Tidakvi dum.*
Make thirsty	Tidaksa met' pingko.
Make me thirsty or enable me to make or be made thirsty	Tidaksa met' pingsung.
Make thyself thirsty or cause thyself to make or be made thirsty	Tidaksa met' pingche.
Be not hungry	Suksa thá met'.
Make not hungry	Suksa met' thá ping.
Be not thirsty	Tidaksa thá met'.
Cause not to thirst	Tidaksa met' thá ping.
Be sleepy = cover sleep, n.	Impi yot' or yosche. Impi yotvi dum.
Make sleepy	Impi yot' pháto. Impi yotvi thumto.
Make not sleepy	Impi yot thá pháto. Impi yotvi thá thumto.
Be cold (being), n.	Jumsa met'.
Be cold (thing)	Khimche.
Make cold (being)	Jumsa met' thá ping. Do. do. do. pháto.
Make cold (thing)	Khimto.
Make not cold (being)	Jumsa met' thá ping. Do. do. do. pháto.
Make not cold (thing)	Thá khimto.
Be warm, n.	Jekhom ponchedum.
Warm him or it	Jeto. Jekhom páko.
Warm thyself	Jeche. Jekhom pánche.
Cause thyself to be warmed or to warm him	Je pingche.
Cause him to be warmed or to warm another	Je pingko.
Warm me	Je sung.
Cause me to be warmed or to warm another	Je pingsung.
Be dirty (become) n.	Penki or Penkimu dum. Penki or penkimu no (be).
Dirty thyself, intr.	Penki or Penkimu pánche.
Dirty it, tr.	Penki páko.
Dirty it for him	Penki páto.
Cause to dirty or to be dirtied	Penki papingko.
Be clean, n.	Wota dum.
Be not clean	Wota thá dum.
Clean thyself, intr.	Wota pánche and woche.
Clean it, tr.	Woto. Wota páko.
Clean it for him	Wota páto.
Clean not thyself	Thá woche.
Clean it not	Thá woto. Wota thápo.
Be angry, n.	Risi bok.'
Make angry, tr.	Risi phokto or pho'ko.
Abuse, revile, tr.	Jishto.

* Any state of body that continues or is to come, like thirsty, sleepy, is expressed by the active participle—if it be supposed complete, like asleep, by the past or passive participle, thus impi yotvi is sleepy; impi yosta, asleep. Met, = die, and suksa met' = die of hunger: tidaksa met' = die of thirst, or literally, of want of water.

English.	*Váyu.*
Cause to revile	Jit'pingko.
Abuse thyself	Jishche.
Abuse me	Jishsung.
Quarrel, n.	Phwe.
Cause to quarrel	Phwet' phá'to (phásto).
Cause me to quarrel or be quarrelled with	Phwet' phásung.
Cause thyself to quarrel or be quarrelled with	Phwet' phásche.
Cause him to quarrel or be quarrelled with	Phwet' pháto (phásto).
Be friendly	Tosche.*
Be united or reconciled, intr.	Totnachhe, D. Toschine, Pl.
Make friendly	Tophto (Toshto).
Unite	
Reconcile, tr.	
Cause to unite or to be united	Tot' pingko.
Be not united = unite not yourselves	Thá tosche.* (Thá toschine, P.)
Unite not, tr.	Thá tot'.
Fight, n.	Pat. Patnachhe, D. Patchine, P.
Cause to fight or to be fought	Pat pingko.
Cause not to fight or to be fought	Pat thá ping.
Cause me to fight or be fought with	Pat ping sung.
Cause thyself to fight or be fought with	Pat ping che.
Cause him to fight or to be fought	Pat ping ko.
Be victorious, n.	Then.
Make him victorious	Thento.
Cause to make victorious	Then pingko.
Make thyself victorious	Thenche.
Make me victorious	Thensung.
Cause me to be made victorious	Thenpingsung.
Conquer him, tr.	Wonto.†
Conquer thyself	Wonche.
Conquer me	Wonsung.
Cause him to conquer or be conquered	Wonpingko.
Ask aid to conquer thyself	Wonpinche.
Cause me to be conquered or to conquer	Wonpingsung.
Be conquered	Yáng. Yángla (see note at Run).
Succumb, n.	
Cause to succomb by thy own act	Yángto.
Cause to succumb through another's agency	Yáng pingko.
Cause me to succumb by thy own act	Yángsang.
Cause me to succumb through another's agency	Yáng ping sung.
Work, trans.	Kám páko.
Work for self, do own work	Kam pánche.
Work for him, do his work	Kam páto.
Work for me, do my work	Kam pásung.
Cause to work or be worked	Kam pápingko.

* The genius of these tongues requires such a phrase as 'be reconciled' to be set down in the dual or plural. So also fight, &c.

† The comparison of the roots then and won will show how these tongues attempt to fend off the equivoques resulting from imperfectly developed grammar. Wonto is used as a neuter with transitives, and phasche (not wonche) replaces it with neuters, Top won tungmi, I can strike. Im phaschungmi, I can sleep.

English.	*Váyu.*
Cause thyself to work or thy work to be done	Kam pápingche.
Cause to work for him or his work to be done	Kam pápingto.
Play = amuse thyself, intr.	Hánche (s' amuser).
Make him play or do thou thyself amuse him, tr.	Hánto (amuser).
Cause him to be made to play or have been amused (per alterum)	Hánpingko.
Play with me	Ang nung hánche.*
Amuse me	Hánsung.
Cause me to be amused	Hánpingsung.
Be tired, n.	Jyop'.†
Make tired or tire it	Jyopto.
Tire thyself	Jyopche.
Tire me	Jyopsung.
Cause me to be tired or to tire	Jyop pingsung.
Cause thyself to be tired or to tire	Jyop pingche.
Cause him to be tired or to tire	Jyop pingko.
Be rested, take rest, rest thyself	Nekche.
Rest it, give rest	Ne'ko (Nek-ko).
Cause to give it rest	Nek'pingto.
Cause thyself to have rest	Nekpingche.
Do thou give me rest	Neksung.
Cause me to have rest	Nek pingsung.
Take not rest	Thá nekche.
Give not rest	Thá nek'.
Move, n.	Duk'.
Move it, trans.	Thukto. Duk' pingko.
Cause it to be moved or to move it	Thukpingko.
Be still, move not	Thá duk'.
Make still, move it not	Thá thukto.
Be quick, ac. intr. = quicken thyself	Plakche.
Quicken, tr.	Plakto.
Cause to quicken or to be quick	Plakpingko.
Do thou quicken me	Plaksung.
Cause me to be quickened	Plakpingsung.
Cause thyself to be quickened	Plakpingche.
Be slow, be dilatory, delay, n.	Gá
Cause to be slow or delay it	Gát'pingko.
Stay, stop, stop thyself, intr.	Thikche.
Stay him, stop him, tr.	Thikto.
Cause him to be stopped or to stop him	Thik pingko.
Let him depart	Lat'pingko.
Be intoxicated, n.	Vi
Intoxicate, tr.	Vit'pháto.
Tell the truth	Diksa hot, n. Diksa ishto, tr.
Cause to speak truth	Diksa hotpingko. Diksa itpingko.
Tell falsehood	Mang diksa hot'. Mang diksa ishto. Budhia háto.
Cause to lie	Budhia hánpingko.
Believe, obey, tr.	Honko.

* Literally, amuse thyself with me, along with me. The sense is quite different from that of hánsung in which I am solely the amused party.

† From jyop comes the Newari jyápu, a labourer, though one tongue has lost the noun; the other, the verb! See Twist.

English.	*Váyu.*
Cause to believe or obey, or to be obeyed	Honpingko.
Disbelieve, disobey	Thá hon.
Forbid, tr.	Dávohá thikto.
Prevent, tr.	Thikto.
Present, offer. tr.	Cho'-ko (chokko).
Offer not	Thá chok'
Accept, intr.	Dosche.
Accept it, tr.	Doko
Accept it for self	Dosche.
Accept it for him	Dosto.
Accept not or refuse	Thá dosche.
Accept it not or refuse it	Thá dó.
Choose, select, tr.	Lu'ko. Luksung. Lukche. Lukto.
Cherish, protect, tr.	Tunko.
Cherish thyself or thy own	Tunche.
Cherish me	Tunsung.
Cause me to be cherished or to cherish	Tunpingsung.
Abandon, neglect, leave, tr.	Wás'to (Wásto).
Confine, imprison, tr.	Thikto.
Set at liberty, tr.	Teshto.
Have, intr.	Gosche. Ungbe-penku nó or dum.
Have not, want	Thá gosche. Ungbe penku thá nó or thá dum.
Cause him to have	Got'pingko. Wáthim bepenku-thumto.
Cause not to have	Thá got ping. Wáthim be penku thá thumto.
Give, trans.	Háto. Mumto.
Give me or to me	Hásung. Mumsung.
Give to or for thyself	Hánche.* Mumche.
Give to him or for him	Háto. Mumto.
Give not	Thá háto. Thá mumto.
Cause to give or to be given	Hápingko.
Cause not to give or not to be given	Há thá ping or Thá há píng.
Give it back, return it to him	Lipto (see take back).
Cause to return or to be returned	Lip pingko.
Give again (more)	Gessa háto.
Take, intr.	Lasche. Dosche.†
Take it, tr.	Lasto. Doho.
Take for thyself, i. e. appropriate	Lasche. Dosche.
Take it for him	Lashto. Dosto.
Cause to take or be taken	Lakpingko. Dot pingko.
Take it back, quasi, return it to self	Lipche (see give back).
Save, preserve, cure, him (life)	Cholko.
Save, cure thyself	Cholche.
Save me	Cholsung.
Destroy (life)	Sishto (see kill).
Keep, preserve (thing)	Táko (see keep).

* Compare "Take." The pronominalization of the Váyu verbs prevents a good deal of that difficulty which the Turanians generally experience in furnishing simple equivalents for the words 'give' and 'take,' because the genius of the languages exacts on all occasions a rigid attention to the results of action, the objective as well as subjective results. Different roots or different modifications of the same roots must necessarily convey the idea involved in each case.

† See remark at buy. The result of taking is appropriation by self. Hence the intr. verb. The words give and take might alone suffice almost to prove the unity of the Turanian languages.

English.	*Váyu.*
Spoil (thing)	Nasi páko.
Be handsome	Bingcho dum.* Bingmi dum.
Make handsome	Bingcho thumto.
Adorn	Bingcho páko.
Adorn thyself	Bingcho pánche.
Adorn him	Bingcho páko.
Adorn it for him	Bingcho páto.
Adorn her	Bingmi páko.
Grow, animal plant, n.	Jongche. Hon (khon). Liche.
Grow it or cause to grow, tr.	Jongto. Honto. Lito.
Decay, n.	Ri. Rila.
Decay it or cause to decay	Rito. Ripingko.
Be adult or mature	Bangcho dum. Bangmi dum.*
Make mature	Bangho páko.
Steal, tr.	Khuko.
Steal for thyself	Khuche.
Steal for him, for another	Khuto.
Cause to steal or be stolen	Khu pingko.†
Steal not	Thá khu.
Cause not to steal or be stolen	Khu thá ping.
Deceive, cheat, tr.	Mángpingko (see forget).
Deceive thyself	Mángpingche.
Deceive not	Thá mángping.
Deceive me	Máng pingsung.
Cause me to be deceived	Máng pá pingsung.
Accompany, intr.	Ko'na la'la. Minung khokche.
Leave, quit, tr.	Wás'to.
Remain with, intr.	Ko'na musche.
Sit, = seat thyself, intr.	Musche (S'asseoir).
Seat, tr.	Muphto (Mushto).
Cause to seat or to be seated	Mut'pingko.
Cause thyself to be seated	Mut'pingche.
Sit not	Thá musche.
Seat not	Thá mut'.
Cause not, do not cause, to sit or be seated	Mut'thá ping or thá mut'ping.
Stand, intr.	Ipche = erect thyself.
Make stand	I'po = erect it or him.
Make stand for another	Ipto = erect it for him.
Cause to make stand, to be erect	Ippingko.
Stoop, intr.	Khungche.
Make stoop, tr.	Khungto.
Cause to make stoop	Khung pingko.
Lie down, intr.	Likche. Likla. Lik.
Lay down, make lie down	Li'ko (Lik-ko).
Cause to be laid down or to lay down	Lik pingko.
Get up, if recumbent	Buk' (see Wake).
Get up, if sitting	Ipche (see stand).
Remain standing, intr.	Ipipha musche.
Fall, on ground, n.	Ruk'. Ruk'la.
Cause to fall, ditto	Ruk'pingko.
Fall from aloft, n.	Duk'. Duk'la.
Make fall or throw down or let fall	Tu'ko (Tukko) tuksung, tukche, tukto. Duk pingko.
Do not make fall	Thá tuk'. Duk' thá ping.

* Final cho and mi are proper to the sexes. See adjectives.
† Khu phá'to (phasto) make a thief of him.

English.	*Váyu.*
Get on, mount, n.	Chángche.
Mount him, cause to mount	Changto.
Get off, dismount	Lische, n. Listo, tr.
Put down. Place. Put, tr.	Táko.
Put down or place for me	Tásung.
Ditto ditto for self	Tánche.
Ditto ditto for him	Táto.
Lift up, raise* from ground, tr.	Reko, without force. Guko, with force.
Lift up for self	Resche. Gukche.
Ditto ditto for him	Resto. Gukto.
Ditto ditto for me	Ressung. Guksung.
Throw, tr.	Jupto, jupsung jupche.
Catch with open hand or spread cloth, tr.	Doko.
Catch with open hand for self	Dosche.
Ditto ditto for him	Dosto.
Catch by grasp, tr.	Chhuko.
Ditto ditto for self	Chhusche.
Ditto ditto for him	Chhusto.
Keep, tr.	Táko (see put.)
Snatch from, tr.	Láto, lásung lánche.
Throw away, tr. Squander, tr.	Hopto.
Squander your own	Hopche.
Be near, n.	Khewa nó. Khewá pónche.
Approximate thyself	Khewa pánche.
Approximate it	Khewa páko.
Be distant, intr.	Khosche. Kholámdum.
Distance him, tr.	Khot'pháto. Kholam thunto.
Distance thyself	Khot'phasche.
Bring, trans.	Pishto.
Bring me or for me	Pishsung.
Bring thyself or for thyself	Pishche.
Bring him or for him	Pishto.
Fetch, comp.	Bálá (= to bring go).
Fetch it	Pishto (Bálá has no trans.)
Fetch it for me or fetch me	Básung.
Fetch for thyself or do thou thyself fetch	Bánche.
Fetch for him	Báto ? ? (obsolete trans.)
Cause to fetch or be fetched	Bá pingko.
Take away, tr.	Lakto.
Take yourself off or take it away for thyself	Lakche.
Cause to take away or to be taken away	Lak pingko.
Send, tr.	Pingko.
Send it for thyself Do thou thyself send or send thy own	Pingche.
Send it for him or on his account or send his things	Pingto.
Send me or for me	Pingsung.
Send him or it	Pingko.

* Raise on the ground is ipo, = erect it or him, as ipche is erect thyself = sit up or stand up. For get up, to a sleeping man, you say sipche, to a sitting man, ipche, to one lying down, buk'. Rise, as respects beings, is ipche or buk' therefore, but as respects the heavenly bodies the equivalent term is lok', = appear. Specialization is the soul and body of these tongues, which remedy defects of grammar by multiplication of terms, so as to fend off mistakes in the best way available. See note on Kuko. Quoad falling, ruk' and duk' apply to beings only. The word for things is lik.'

English.	*Váyu.*
Cause to send or be sent	Ping pingko. Ping phato.
Carry, bear, trans.	Kuko.*
Carry it for thyself	Kuṇche.
Carry it for him	Kuto.
Carry it for me or me	Kusung.
Cause him, it, to carry or to be carried	Kupingko.
Cross over	Lumthe.
Cross it over	Lumto.
Cross under	Kuḍikhalala.
Cross it under	Kuḍikha latpingko.
Hold, take in hand, tr.	Kuko (see carry).
Grasp, tr.	Chhuko, chhusche chhuphto.
Hold up, support, tr.	Doko (see catch).
Let it fall or let it be fallen	Liklayu.
Fall, n. (things only).	Lik'la. Lik.
Throw down, tr.	Li'ko (Likko) liksung, likche, likto.
Enter, n.	Bek'.
Cause to enter	Phekto, pheksung, phekche.
Admit. Insert, tr.	Bek pingko.
Issue. n.	Lok'.
Cause to issue, expel, drive out	Lokto, loksung, lokche.
Ascend, go up, n.	Bek'.
Ascend, come up, n.	Jok'.
Descend, go down, n.	Yonkha la'la. Yu lá.
Descend, come down, n.	Yu.
Cause to ascend or to be ascended	Bek'pingko. Jok'pingko.
Cause to descend or to be descended	Yonkha lat pingko. Yut' pingko.
Arrive, n. here there	Dong, Dongla.
Cause to arrive, tr.	Thongto.
Depart, n.	Lakche† (see take away).
Precede, n.	Honko ponche.
Follow, n.	Nongna ponche
Attend on, n.	Ko'na ponche.
Appear = show thyself, n.	Khuṇche.
Make it, him, appear	Khuṇto.
Cause to make appear	Khuṇpingko.
Disappear, n. = hide thyself, or lie hid	Kiṇche.
Make disappear, make hide or make lie hid	Khiko. / Kinpingko.
Cause to make disappear	Khit'pingko.
Make disappear thy own person or goods	Khische.
Make disappear for another	Khisto.
Make me disappear	Khissung.
Be lost / Lose, n.	Damla. Dam.
Lose it, tr.	Thámpo, thamsung, thámche, thámpto.
Cause to lose it	Thampingko.
Lose it not	Thá thám.

* Kuko, like all transitives of its class, gives both the active and passive of 3rd person, preterite; thus, kukum, he carried or was carried. But what we must call the passive has no imperative. From yu, to descend, you can indeed form Kuyu, let thyself or him be carried. In the causal form of the verb both senses of the imperative are conveyed, and hence the causal form is often to be regarded as the only representative in these tongues of the passive, as for example, in Newári.

† Lakche = va-t-en in French. Lá, to go, is the root.

English.	*Váyu.*
) be lost or cause him t	Thám tháping.
	Hoko.
	Thá ho.
for me	Hosung.
' own or for thyself or self search	Hosche (Hoche).
ı, for his, on his account	Hophto ? (Hosto) Hoto ?
him	Thá hot (ho).
	Lenko.
	Thá leng.
or to be found	Leng pingko.
: me	Leng sung.
lf or thy own	Leng che.
	Leng to.
for me or me to be found	Leng pingsung.
for self or thyself to be	Leng pingche.
for him or him to be	Leng ping to.
	Teshche.
	Teshto.
gin or be begun	Tet pingko.
	The root is repeated with the substantive verb to show continued action, as gik nagik nomi, it is flowing and flowing. Topna top nognom, I am striking.
	Chusche.
	Chuphto (chusto).
l or be ended	Chut pingko.
	Phi (see on).
to come or to be come	Phit'pingko.
ome or to be come	Phit'pingsung.
to come or be come	Phit'pingche.
come or to be come	Phit pingko.
ome on another's account	Phit pingto.
	Thá phi.
ome	Phit thá ping.
	La'la (iterated root).
	Lat'ping ko.
	Thá la'la.
o go	Lat thá ping.
way	Khikche.
Make get out of the	Khikto.
for me	Khiksung.
	Rimche.
ct, tr.	Rimto.
	Rimsung.
	Rimto.
	Rimpingko.
re, (2.) there.	(1.) Dong. (2.) Dongla.*
	Dong pingko. Thongto.
	Lokla.
	Lokto.
	Lishche.

also Bek' = enter, is *come* in, and Bek'la, is *go* in.

English.	*Váyu.*
Make return, tr.	Lishto.
Increase in height, n. = grow	Jongche. Jongta dum.
Heighten it	Jongto.
Heighten me. Make me grow	Jongsung.
Increase, in bulk, n.	*H*onta dum.
Increase thyself = grow	*H*onche.*
Increase it, tr. in bulk, tr.	*H*onto (hard h).
Increase me in bulk	*H*onta thumto.
Increase in length, n.	*H*onsung.
Lengthen it	Phinche. Phinta dum.
Lengthen me	Phinto. Phinta páko.
Decrease of all sorts, n.	Phinsung.
Decrease it	Yáng. Yangla.
Add to, tr.	Yáng pingko.
Deduct from, tr.	Khapto, khapche, khapsung.
Cultivate (land), tr.	Yángto, yángche, yángsung.
Cultivate it for me or my land	Vik yé ko.†
Cultivate it for him or his land	Vik yeksung.
Cultivate for self	Vik yekto.
Dig, tr.	Vik yekche.
Dig for self	Duko.
Dig thy own	Dunche.
Dig for him, dig his field	Duto.
Dig me, for me, my field	Dusung.
Cause to dig or be dug	Du pingko.
Cause thyself to dig or cause thy own field to be dug	Du pingche.
Cause him to dig for another, or another's field to be dug for him	Du pingto.
Cause me to dig or my field to be dug, or (if the field spoke) me to be dug	Du pingsung.
Dig not	Thá du.
Cause not to dig	Du thá ping or Thá du ping.
Plough, tr.	Ru'ko Ruk-ko.
Plough for self	Rukche.
Plough for him	Rukto.
Plough for me or, (if the field spoke) plough me	Ruksung.
Plough not	Thá ruk'.
Plough not for self or plough not thy own field	Thá rukche.
Cause not to plough, or be ploughed	Thá ruk' ping.
Sow, tr.	Chho'ko (chhok-ko) chhoksung, chhokche, chhokto.
Cause to sow or be sown	Chhok'pingko.
Cause not to sow, or be sown	Chhok'tháping.
Sow for me or sow me‡	Chhok'sung.
Sow me not or sow not for me	Thá chhok'gno.
Transplant, tr.	Luphto (Lusto) lussung, lusche.
Transplant not	Thá lut'.
Cause to transplant or to be transplanted	Lut'pingko.

* H *underlined thus, h.* is a guttural.

† This word means 'clear the jungle' and alone suffices to show the state of the country and of the people.

‡ Sow me, (what the seed would say) is the true grammatical sense. But the other is widely, nay alone, in use, the constructio ad sensum still overruling the grammar.

English.	*Váyu.*
Reap, tr.	Peshto, pessung, pesche.
Reap not	Thá pet'.
Cause to reap or to be reaped	Pet'ping ko.
Cause not to reap or be reaped	Pet'thá ping.
Gather, pluck (flowers), *not* greens, tr.	Tuko, tusung, tunche, tuto.
Gather not	Thá tu.
Gather (cotton) } tr. Pluck (fruit) }	Seko, sesung, senche, seto.
Gather not (cotton)	Thá se.
Gather (greens), tr.	Peshto (see reap).
Pluck up by roots, tr.	Photo phosung, phonche.
Eradicate not	Thá photo.
Fell—tree, tr.	Phoko, phossung phosche.
Fell not—tree	Thápho.
Breed cattle, tr.	Tunko, tunsung, tunche, tunto.
Breed not	Thátun.
Slaughter cattle, tr.	Sishto (kill). Yukto (cut).
Graze, intr. and tr.	Gupche, intr. Gupto, tr.
Flay or decorticate, tr.	Tá'ko, taksung, takche, takto.
Flay not	Thá tak.'
Peel fruit	Keko, kessung, kesche, kesto.
Shear, tr.	Yo'ko, yeksung, yekche, yekto.
Shear not	Thá yek'.
Buy, ac. intr.	Ingche.*
Buy it, tr.	Ingko, ingsung, ingche, ingto.
Cause to buy or be bought	Ing pingko.
Buy it not	Thá ing.
Buy not for him	Thá ingto.
Buy me or for me†	Ingsung.
Do thou thyself buy it or buy it for thyself	Ingche.
Buy it for him	Ingto (Ingkto).‡
Buy it	Ingko.
Sell, tr.	Thamto.
Cause to sell or to be sold	Thampingko.
Sell me or for me.	Thamsung.
Sell thyself or for thyself, or thy own	Thamche.
Sell him, it, or for him or his	Thamto.
Sell not	Thá thamto.
Exchange or change, ac. intr.	Jyapche (see buy).
Exchange it	Jya'po (Jyap po).
Exchange me or it for me	Jyap'sung.
Exchange it for him	Jyap'to.‡
Exchange not	Thá jyap'che.
Exchange it not	Thá jyap'.
Exchange it not for him	Thá jyap'to.
Exchange me not or not for me	Thá jyapmo.

* See eat and take. In every act, of which the result returns to self, this form is preferred to the transitive. The French tongue affords a good clue.

† I have already said that buy me seems to be the truer sense, whence the passive ingsungmi, I was bought. But in the class of transitives to which ingko belongs, ingsungmi is also the present and future tense of the active voice, viz. I buy it or will buy it. Ingche, the intransitive, gives ingchung mi in both tenses, I buy (i. e. will buy) and I bought.

‡ This form solves the difficulty as to two transitive signs following a verbal root, and enables me often to reach the primitive monosyllabic type of words—a thing of the highest import to special and general philology.

English.	*Váyu.*
Lend, tr.	Penku háto, hásung, hánche.
Borrow, intr.	Penku lasche (see buy),—lassung, lasto.
Pay debt, tr.	Thengko, phensung, phengche, phengto.
Pay not	Thá pheng.
Count, tr.	Hito, hisung, hinche, hito.
Count not	Thá hito.
Measure or weight, tr.	Po'ko vel Pu'ko, puksung, pukche, pukto.
Weigh not	Thá pok'.
Plaster, tr.	Suto, susung, sunche. Suto.
Make house, tr.	Kem páko.
Make clothes, tr.	Jewa piko, pisung, pinche, pito.
Make not clothes	Jewa thá pi.
Make clothes for me	Jewa pisung.
Make for self	Jewa pinche.
Make for him	Jewa pito.
Spin, tr.	Chenko, chingsung, chingche, chingto.
Spin not	Thá cheng.
Weave, tr.	Pungko, pungsung, pungche, pungto.
Weave not	Thápung.
Sew, tr.	Piko.
Sew not	Thá pi.
Grind, tr.	Reko, resung, renche, reto.
Work mine, tr.	Kháni duko (dig).
Work iron, tr.	Khakchingto'po (beat) topsung, topche, topto.
Work wood, tr.	Sing chu'ko (plane) chyuksung, chukche, chukto.
Work clay, tr.	Ko chyáko (knead) chyássung, chyásche, chyásto.
Cook, tr.	Khoko khossung, khosche, khosto.
Be cooked = be ripe, be prepared, n.	Min, minko, minche, minto.
Boil, tr.	Khoko.
Boil not	Thá kho.
Roast, tr.	Sunko.
Ditto for me	Sunsung.
Ditto for self	Sunche.
Ditto for another	Sunto.
Grill, fry, tr.	Chuko, chusung, chunche, chuto.
Cut, tr.	Yukto.
Cut not	Thá yukto.
Cut me or for me	Yuksung.
Cut thyself or for thyself	Yukche.
Perforate, tr.	Sá (s) to.
Pierce (being), tr.	Chhepto, chhepche, chhepsung.
Tear, tr.	Jito, jisung, jinche, jito.
Tear thy own, tear for thyself, tear thyself	Jinche.
Split, tr.	Hakto. Chito, haksung, hakche, hakto.
Break , tear (long things), tr.	Chi'ko (chik'-ko), chiksung, chikche, chikto.
Break it, in pieces	*K*heto, *k*hesung, *k*henche.
Burst it (round things), tr.	
Be broken or be burst, n.	Jik'. Jikla. Réla or Ré.
Brew, tr.	Swe pophto, possung, posche, posto.
Distill, tr.	Bukchápako.
Filtrate. Deficate, tr.	Chi'po, chipsung, chipche, chipto.
Be sharp, n.	Yep.
Sharpen, tr.	Yep pháto. Chho'po. Chho'po, gives chhopsung, chhopche, chhopto.

English.	*Váyu.*
Be blunt, n.	Gnun.
Blunten. Make blunt, tr.	Gnúto, gnúsung gnúnche.
Shake, tr.	Hok'to, Hoksung, hokche.
Move, n.	Duk'.
Move it, tr.	Thukto, thuksung, thukche.
Be still, n. (= move not).	Thá duk'.
Make still, tr.	Thá thukto.
Contain or hold, (= Be contained and contain it).	Vek, vekche, n. Vekto, vekpháto, tr.
Make contain or cause to be contained	Vek pingko.
Retain, sustain, tr.	Doko.
Retain, intr.	Donche.
Cause to retain	Dot'pingko.
Ooze out, n.	Jot'.
Make ooze out	Jot'pingko.
Stop it oozing out	Rúto, rúsung, rúnche.
Be full—belly (fill own belly), intr.	Tamche.
Fill it—belly, tr.	Tamto, tamsung, tamche, tamto.
Be full—vessel	Chinche. Dam. Phul dum.
Fill it—vessel	Damto, dampingko, Phul páko, Chinko.
Be empty, n.	Poláng dum.
Empty it, tr.	Poláng páko.
Shine, as sun, n.	Kák. Chok'.
Flow, as water	Gikla. Dengla.
Cause to flow	Gik pingko.
Blow, as wind, intr.	Hujum ponche.
Grow, as tree, ac. intr.	Liche.
Cause to grow, or grow it	Lito, lisung, liche, lito.
Decay, rot, n.	Rila. Méla.
Make decay	Rit pháto. Met'-phá'to (phasto).
Flower, n.	But'.
Cause to flower	But' phá'to, phassung, phasche, phasto.
Fruit, n.	Sé.
Cause to fruit	Set'phá'to (phasto).
Be ripe, n.	Min.
Ripen, tr.	Minko, minsung, minche, minto.
Ripen it for him	Minto.
Be raw, n.	hhálang-no-dum.*
Make raw, tr.	Chhálang páko, posung, pánche, páto.
Be cold (things only) intr.	Khimche.
Make cold, tr.	Khimto, khimsung, khimche, khimto.
Be hot, intr., n.	Jeche. Jekhomdum or ponche.
Heat it, tr.	Jeto. Jekhom páko. Jeto gives jesung, jenche, jeto.
Be luminous, n.	Dang dang dum or ponche.
Make luminous	Dang dang páko.
Be dark, n.	Kung kung dum or ponche.
Darken it, tr.	Kung kung páko.
Light it (candle), tr.	Náko, násung, náche, náto.
Light, intr. (Be lighted)	Náche.
Kindle it (fire), tr.	Du'po, dupsung, dupche, dupto. Josto, jossung, josche, josto.
Kindle, Be kindled Kindle thyself (n. or ac. intr.)	Josche. Dupche.

* Nó = be. Dum = become.

English.	*Váyu.*
Burn, i. e. destroy by fire, tr.	Yemto, yemsung, yemche, yemto.
Be burnt (= go burnt, n.	Yemla.
Burn thyself or burn it for self, ac. intr.	Yemche.
Burn, corpse, tr.	Umto, umsung, umche, umto.
Bury, corpse, tr.	*Kh*umpo, khumsung, khumche, khumto.
Melt, n.	Yekla (see run).
Melt it, tr.	Ye'ko (see cultivate).
Cause to melt	Yek pingko.
Congeal, n.	Ningla.* Nengle.
Congeal it, tr.	Ningto. Nengto.
Congeal thyself	Nengche.
Congeal me	Nengsung.
Cause to congeal	Ningpingko.
Share out, apportion, tr.	Pleko, plesung, pleche, pleto.
Bring together, collect, tr.	Ko'na páko. Hupto.
Collect for thyself, intr.	Hupche.
Collect for me or me, p.	Hupsung.
Separate, tr.	Gege páko.
Divide, tr.	Thuto, thusung, thunche.
Scatter, tr.	Hampo.
Join, what broken, tr.	Thuphto (Thusto) thussung, thusche.
Disjoin, undo, tr.	Chháko, chhássung, chhásche, chhásto.
Mix, tr.	Khunto, khunsung, khunche.
Unmix, tr.	Thoto, thosung, thonche.
Save (money), tr.	Hupto, hupsung, hupche.
Squander, tr.	Hopto, hopsung, hopche.
Spread, tr.	Poko, posung, poche. Hámpo, hámsung, hámche.
Fold, tr.	Khoko, khossung, khosche.
Be shut, intr.	Thikche.
Shut it, tr.	Thikto.
Be open, open for thyself, intr.	Honche.†
Open it, tr.	Honko.
Press, squeeze, compress it, tr.	Napto.
Compressed be, or compress thyself or compress with own hand	Napche.
Depress, tr.	Phimto.
Be depressed, depress for thyself	Phimche.
Express, tr.	Pelto.
Be expressed, intr.	Pelche.
Turn over carefully, tr.	Lo'ko (Lok-ko) Loksung, Lok-che, Lok-to.
Turn topsy turvy. Put in disorder	Khálim, khulim, páko.
Spread in sun to dry (grain), tr.	Blento or Bento, blensung, blenche.
Roll up, tr.	Ku'ko (Kukko) kuksung, kukche, kukto.
Unroll, tr.	Chháko, chhassung, chhasche, chhasto.
Be loose, be slack, n.	Woso dum. Woso ponche.
Loosen, slacken, tr.	Woso páko, posung, pánche, páto.
Be tight	Khwá (s) ta dum.
Tighten thy own or for thyself	Khwásche.
Tighten, tr.	Khwá (s) to khwassung, khwasche.
Cause to tighten	Khwat'pingko.
Gird thy loins, a. intr.	Kikche.
Bind, tr.	Pángto, pánsung, pánche. Wampo, wamsung, wamche, wamto.

* e and i, like o and u are constantly commuted.

† Thikche and honche, shut thyself, and open thyself, addressed to the door.

English.	*Váyu.*
Unbind, tr.	Chháko (see unroll).
Pack, tr.	Khuli páko.
Unpack, tr.	Khuli chháko.
Load, tr.	Ku pingko.
Unload, tr.	Khuli táko, tosung, tánche, táto.
Put on, tr.	Cho'ko (chokko) choksung, chokche, chokto.
Take off, tr.	Luko, lusung, lusche, lusto.
Take off (from fire).	Yo'po, yopsung, yopche, yopto.
Put in, insert, tr.	Kheko, khessung, khesche, khesto.
Take out, tr.	Thophto, thossung, thosche.
Pour in, tr.	Kheko, khesung, khesche, khesto. Chosto, chhossung, chhosche.
Catch as poured in, tr.	Doko.
Pour out on ground, tr.	Lukto.
Suspend, tr.	Chisto, chissung, chische. Veko, vesung, vesche, vesto.
Take down what suspended, tr.	Luko, lusung, lusche. luto.
Take hold of, tr.	Chhuko, chhusung, chhusche, chhuto.
Quit hold of, tr.	Teshto, tesche, tessung.
Throw, tr.	Jupto, jupsung, jupche.
Catch as thrown, tr.	Doko, dossung, dosche, doto.
Stay, stop, intr.	Thikche.
Stay it, stop it, tr.	Thikto.
Stop me	Thiksung.
Let go, tr.	Lat'pingko.
Enable to go, tr.	Lat'pháto.
Be clean, n.	Wota dum. Woche.
Make clean, tr.	Woto, wosung, woche.
Wash—things only, tr.	Chhunko.
Wash thy own, intr.	Chhunche.
Wash me or mine, p.	Chhunsung.
Rub or rub it, tr.	Khisto.
Rub thy own or rub simply, intr.	Khische.
Rub me or mine	Khissung.
Be polished	Liku ponche.
Polish it, tr.	Liku páko.
Polish it for thyself	Liku pánche.
Cover, tr.	Rumto. Supto.
Cover thyself	Rumche. Supche.
Cover me	Rumsung. Supsung.
Uncover, tr.	Honko, hongsung, honche, hongto.
Uncover thyself or thy own	Hongche.
Shoot, with arrow, gun, tr.	Wo'po (wop-po).
Shoot me or for me	Wopsung.
Shoot thyself or for thyself	Wopche.
Shoot it for him, tr.	Wopto.
Stone, hit with stone, tr.	Chásto, chassung, chasche.
Wring its neck, tr.	*Khi*'po (khippo) khipsung, khipche, khipto.
Wring not its neck	Thá *khip*'.
Wring clothes, tr.	Pelto, pelsung, pelche.
Wring not clothes	Thá pelto.
Twist rope, tr.	*Khi*'po.*

* In Newari Khipo is used only substantively, a rope. Just so the root kai means the hand and to grasp in Telegu and Tamil, but to grasp only in Newari. Whosoever will *thus* search may discover the true extent, quoad words, of Turanian affinities, not otherwise. See Tire.

English.	*Váyu.*
Untwist rope, tr.	Chhákо (see loosen).
Resemble, be like	Tosche. Totvi dum.
Cause to resemble or liken simply	Tophto. Totvi páko.
Cause to cause to resemble, or cause to liken	Tot'pingko.
Be unlike	Máng totvi dum.
Make unlike	Máng totvi páko.
Be white, n. (things, animals)	Dáwáng dum. Dáwáng ponche.
Be white (rationals only),	Bochho, dum, ponche.
Whiten it, } tr.	{ Dáwáng páko.
Whiten him, }	{ Bochho páko.
Whiten me	Dáwáng. Bocho, posung or posung.
Whiten thyself or it for thyself or do thou thyself whiten him or it	Dáwáng. Bochho, pánche.
Whiten it for him	Dáwáng páto.
Be ripe (fruits)	Ji.
Make ripe (ditto)	Jito, jisung, jinche.
Be ripe (grains)	Min.
Make ripe (ditto)	Minko, minsung, minche, minto.
Be wet or wet thyself	Ná'-che (násche).
Wet it	Ná'-to, nassung, nasche.
Cause it to be wetted	Nat'pingko.
Be dry (things only)	Dung.
Dry it	Dung pingko.
Dry it in sun	Boko or Bloko,* blosung, blosche, blosto.
Dry it at fire	Sungko, sungsung, sungche, sungto.
Be flavoursome	Chhumche.
Flavour it, tr.	Chhumto, chhumsung, chhumche
Be sweet, n.	Chhinji, dum or ponche.
Sweeten it, tr.	Chhinji, thumto or páko.
Be sour	Jusche.
Make sour	Justo.
Be bitter	Khásche.
Make bitter	Khá (s) to.
Be knotted, intr.	Rupche.
Knot it, tr.	Rupto.
Be great, n.	*H*on (Khon).
Make great, tr.	*H*onto. *H*onta thumto.
Be heavy, intr.	Lishche. Lishtadum.
Make heavy, tr.	Lishto. Lit pháto.
Be light (levis)	Oksáng dum.
Make light, tr.	Oksáng páko.
Be hard, intr.	Chamche.
Harden it, tr.	Chamto, chamsung, chamche.
Cause to harden or to be hardened	Champingko.
Be soft, n.	Nalcho dum.
Soften it, tr.	Nalcho páko.
Be crooked	Khokche. Khokta dum.
Crook it, tr.	{ Kho'ko. Khokta-thumto, khoksung, khokche, khokto.

* Every initial labial followed by a vowel admits ad libitum of an interposed liquid, thus boko vel bloko and so bekto vel blekto = write. I may here add that v and y are constantly used both to keep apart concurring vowels and to facilitate the utterance of initial vowels.

Adverbs and Prepositions compared.

English.	*Váyu.*
Come, n.	Phi.
Come in	Bhitari phi. Bek'.
Come out	Tongmaphi. Lok'.
Come back, to rear	Nongna phi or ponche.
Come on, to front	Honko phi. Honko ponche.
Come up	Lonkha or Wanhe phi. Jok'.
Come down	Yonkha or Huthe phi. Yu.
Come back = return	Khálip phi or Lische.
Come again	Gessa phi.
Come once	Kophi phi.
Come twice	Nakphi phi.
Come thrice	Chhukphi phi.
Come four times	Blikphi phi.
Come at once or in one place or together	Kolube phi.
Come at once, at one time	Kophe phi.
Come near	Khewa phi.
Come close	Ko'na phi.
Come apart	Gege phi.
Come far away	Kholám phi.
Come with	Ko'na phi.
Come with me	Ang nung phi.
Come alone	Chhále phi.
Come without me—thee—him	Angmá nosa phi. Ungmá nosa phi. Ámá nosa phi.
Come towards—me—thee—him	Ang rek phi. Ung rek phi. Wathim rek phi.
Come up to me, as far as my position	Ang bong phi.
Come as far as this—that	Ínung bong phi. Minung bong phi.
Come quickly	Wáliga phi.
Come slowly	Pomba or Pomhana phi.
Come by and by, after awhile	Omophe phi.
Come silently	Giwonha phi.
Come noisily	Tamnitam phi.
Come early	Honko phi.
Come at sunrise	Nomoloksinge phi.
Come at sunset	Nomo thip singhe phi.
Come late	Nongna phi.
Come loiteringly	Gá'gát'ha phi.
Come over—by top	Wani phi. Wanim khen phi. Khakkhakha phi.
Come under—by under way	Hutti phi. Hutim khen phi.
Come through, between	Mádumna phi.
Come across	Thekche phi* or Thek thekha phi.
Come to this—that side	Imba phi. Homba phi.
Come constantly	Phina phi ponche.
Come sometimes	Kophi nakphi phi.
Come ever	No such phrase.
Come never	Hákhele† tháphi.

* Equal 'to cross and come,' that is, crossing come = having crossed come, thek thekha phi. The gerund of present time, thekhe, is never used on such occasions.

† Hákhele can only be used with the negative, like jamais in French.

English.	*Váyu.*
Never come again	Hákhele gessa tháphi.
Come by this side	Inikhen phi.
Come by that side	Mini—Wathim—khenphi.
Come to the right	Jájábe phi.
Come by the left	Khánja khen phi.
Come from the west	Nomothip lung khen phi.
Come to the east	Nomolok lung be phi.
Come towards the east	Nomolok lung rekphi.
Come towards the west	Nomothiplung rekphi.
Go towards the plains	Gágin mulungrek la'la.
Go as far as Nepal	Nepal bong lá'lá.
Give a little	Yánggnák háto.
Give much	Chhinggnák háto.
Give secretly	Khinta báha háto.
Give openly	Khunta báha háto.
Give gladly	Yot'yot'ha or Bong ni bong or Bong-bongha háto.
Give sulkily	Máng yot'yot'ha-háto.
Give to-day	Tiri háto.
Give mutually	Háhá, pánachhe, pochhe, Duals.
Give continually	Hánahá páko.
Strike forcibly	Chotiha to'po.
Strike gently	Pom hana to'po.
A house	Kem.
Of a house	Kemmu.
To a house	Kem (no Dat. or acc. sign).
A house	Kem be.
In a house	Kem khen.
From the house	Kem ha.
By (inst.) the house	
Inside / Into the house	Kem bhitari.
Outside / Out of the house	Kem tongma.
As far as house	Kem bong.
Towards the house	Kem rek.
Before the house	Kem honko.
Opposite, in front of, the house	Kem kakphang. Kemmu bimli be.
Behind the house	Kem nongna. Kem senti be.
To the rear of house	
On, upon, the house	Kem wáni be.
Above the house	Kem khen lonkha.
From upon house	Kem wáni khen.
Beneath house	Kem hutti be.
Below the house	Kem khen yonkha.
From under house	Kem hutti khen.
Near the house	Kem khewa.
Far from house	Kem khen kholám.
At the house	Kem be.
On account of house	Kem mu lisi.
In lieu of a house	Kem mu let'chhing.
Through the house	Kem mu mádumna.
Beyond the house	Kem wathe or kem homba.
To right of house	Kem mu jájá.
To left of house	Kem mu khánja.
On this side the house	Kem mu imba or kem imba.

English.	*Váyu.*
On that side the house	Kem mu or kem homba.
From this side the house	Kem inikhen. Kem imbam khen.
From that side the house	Kem wathí khen. Kem mini khen. Kem hombam khen.
With (having) a house	Kem not'he. Kem got'he.
Without (wanting) a house	Kem má not'he. Kem má got'he.

NOTICE.

The Secretaries wish to add that they cannot hold themselves responsible for any misprints in the earlier part of these Vocabularies, especially those in No. V. The MSS. which Mr. Hodgson left with them, when he quitted India, were in such a confused state from ink and pencil interlineations that it was hopeless to avoid errors. This was pointed out to Mr. H. who replied that the Secretaries must do the best they could with them. This they have tried to do, but the task of correcting the proofs has been very laborious.

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Comparative Vocabulary of the Languages of the broken Tribes of Népál.—*By* B. H. Hodgson, *Esq.*, *B. C. S.*

Continued from No. V.

Vayu Declension.

1st of Pronouns.

Personals. Singular.

N.	I, Gó.
G.	Of me, Ang, conjunct, = my.* Angmu, disjunct, = mine.
D.	to me } Gó. No sign.
Ac.	me }
L.	{ In, at / into, me } Ang be.
Ab.	from me, Ang khen.
Ins.	by me, G'há (go-ha).
Soc.	with me, Angnung.
Priv.	without me, Ang má nosa.†

Dual.

N.	Gó nakpu, m. f. Gó nárgung, n.‡

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* Ang the constructive form of gó, means my, before a substantive or qualitive used substantivally, but before a transitive participle it means me or of me, e. g. ang tovi, who beats me, or the beater of me. Yet ang topchyáng is my club, topchyáng being the neuter form of tovi, used as a noun.

† There is no proper privative particle, nor consequently, case. Ang má nosa or gó má nosa = if I be not, I not being, or my not being (present). In Khas, man na bhai: in Newari, ji ma dusa.

‡ Nakpo, náyung is the 2nd numeral which is gendered when used apart, but doubtfully I think, and still more so when used as a dual sign. I find, however, nakpu, nangmi, nayung for the three genders. Also hic et hæc nakpu.

Conjunct.

G. Angchi, excl. Ungchi, incl.

Disjunct.

Angchimu, excl. Ungchimu, incl.

D. Ac. Gonakpu, m. f. Gonargung, n.
L. Angchi be, excl. Ungchi be, incl.
Ab. Angchi khen, excl. Ungchi khen, incl.
Ins. Gó nakpu ha or Ghá nakpu ha.
Soc. Angchi nung, excl. Ungchi nung, incl.

Plural.

N. Gó kháta.

Conjunct.

G. Angki, excl. Ungki, incl.

Disjunct.

Angkimu, excl. Ungkimu, incl.

D. Ac. Gó kháta. No sign.
L. Angki be, excl. Ungki be, incl.
Ab. Angki khen, excl. Ungki khen, incl.
Ins. Go khata ha or Gha khata ha.
Soc. Angkinung, excl. Ungkinung, incl.

Second person.

N. Gon.
G. Ung, conjunct = Thy. Ungmu, disjunct. = Thine.
D. Ac. Gon. No sign.
L. Ung be.
Ab. Ung khen.
Ins. Gon ha.
S. Ung nung.

Dual.

N. Gonchhe.
G. Ungchhi, conj. Ungchhimu, disj.
D. Ac. Gonchhe. No sign.
L. Ungchhi be.
Ab. Ungchhi khen.
Ins. Gonchhe ha.
Soc. Ungchhi nung.

Third Personal.

N. Wathi. All 3 genders.
G. Wathim, conj. Wathimmu, disj.
D. Ac. Wathi. No sign.
L. Wathim be.
Ab. Wathim khen.
Ins. Wathi ha.
Soc. Wathim nung.

Dual.

N. Wathi nakpu, m. Wathi nangmi, f. Wathi nayung, n. c. See note aforegone.

G. Wathim nakpum, conj. / Wathim nakpumu, disj. } m.
Wathim nangmim, conj. / Wathim nangmimu, disj. } f.
Wathim nayung, conj. / Wathim nayungmu, disj. } n. and c.

D. Ac. Wathi nakpu, m. Wathi nangmi, f. Wathi nayung, n. and c.
Loc. Wathim nakpumbe, m. Wathim nangmi be, f. Wathim nayung be n. and c.

Ab. Wathim nakpum khen, m. Wathim nangmim khen, f. Wathim nayung khen, n. and c.
Ins. Wathi nakpu ha, m. Wathi nangmi ha, f. Wathi nayung ha, n. and f.
Soc. Wathim nakpum nung, m. Wathim nangmim nung, f. Wathim nayung nung, n. and c.

Plural.

N. Wathi kháta, m. f. n.
G. Wathim khatam, conj. Wathim khatamu, disj.
D. Ac. Wathi khata.
Loc. Wathim khata be.
Ab. Wathim khata khen.
Ins. Wathi khata ha.
Soc. Wathim khata nung.

Near demonstrative.

N. I. All three genders.
G. Inung, conj. Inungmu, disj.
D. Ac. I. No sign.
Loc. Inung be.
Ab. Inung khen.
Ins. I'ha.
Soc. Inung nung.

Dual.

N. Inakpu, m. Inangmi, f. Inayung, n. and c.
G. Inakpum, conj. / Inakpumu, disj. } m.
Inangmim, conj. / Inangmimu, disj. } f.
Inayung, conj. / Inayungmu, disj. } n. and c.
D. Ac. Inakpu, m. Inangmi, f. Inayung, n.
L. Inung nakpumbe, m. Inung nangmimbe, f. Inung nayung be, n.
Ab. Inung nakpum khen, m. Inung nangmim khen, f. Inung nayung khen, n. c.
Ins. Inak poha, m. Inangmi ha, f. Inayung ha, n. and c.
Soc. Inung nakpum nung, m. Inung nangmim nung, f. Inung nayung nung, n. c.

Plural.

N. I'khata. All genders.
G. Inung khatam, conj. Inung khatamu, disj.
D. Ac. I'khata.
Loc. Inung khata be.
Abl. Inung khata khen.
Ins. I'khata há.
Soc. Inung khata nung.

Remote demonstrative.

N. Mí. All genders.
G. Mínung, conj. Minungmu, disj. &c. as in the last.

Interrogative and distributive pronoun, m. f. Who? Any one. Some person. Su or Suna. Subs. and Adj.

N. Sú. Suna.
G. Súm. Súnám, conj. Sumu. Sunamu, disj.
D. Ac. Sú. Suna.
Loc. Súbe, Sunabe.
Abl. Súkhen, Sunakhen.
Ins. Suha, Sunaha.
Soc. Sunung, Sunanung.

Dual.

N. Su or Suna nakpu, m. Su or Suna nangmi, f. &c. as before.

Plural.

N. Sú or Sunakhata, &c. as before.

Interrogative and distributive pronoun, n. What? Any or something.

N. Mische.
G. Mischem, conj. Mischemu, disj. &c.

Dual.

N. Mische nayung, &c.

Plural.

N. Mische khata, &c.

Relative, interrogative and distributive pronoun and pronominal adjective which, what, who.

N. Hánung, m. f. n.
G. Hánung,* conj. Hánungmu, disj. &c.

Dual.

N. Hanung nakpo, m. Hanung nangmi, f. Hanung nayung, n.

G. { Hanung nakpum, m. / Hanung nangmim, f. / Hanung nayung, n. } conj.
{ Hanung nakpumu, / Hanung nangmimu, / Hanung nayungmu, } disj.

And so on, like wathi, except that hanung has no inflexional shape (itself being inflexional). Hence it has hanung nakpo and hanung khata, where wathi has wathim nakpo and wathim khata. And this is likewise the case with the possessive pronouns, all of which, though but genitives of the personals, are regarded as independant and declined like the personals.

Thus also are declined the interrogative and relative of number and quantity, with its correlative, or háthá, mitha = how much or many? and so much or many. Thus also the adverbs of time and place, Inhe, here, Wathe and Mínhe, there. Hanhe, where? Ithe or Umbe or Abo, now; Míthe, then; Hákhe, when? with all the rest of the adverbs that are not gerunds.

Observe that these adverbs are derived from the demonstratives in the locative case. But, where, I, Mí and Wathi, the pronouns take the inflexional m, or nung, (whence come inungmu and wathimmu = his) the corresponding adverbs have no inflexional mark, but remain immutable, only adding the declensional signs m or mu, be, khen, &c.; and thus we have ithamu and inhemu, of here, and ithakhen, inhekhen, from here, and abomu, of now, abokhen from now, not abommu, abomkhen.

Observe also that the conjunct possessives (genitives of the personals) are indeclinable, but that the disjunct are declinable like the personals. Ang, ung, wathim, inung, minung, are inflexional forms merely, therefore angkhen = from me. But angmu is a possessive pronoun proper, whence angmukhen-be-ha = from mine, in mine, by mine.

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* The conjunct form of the genitive of this pronoun has no sign, being marked by position alone, as when two substantives meet is always admissible. Hánung is itself a genitive = of whom, of which, e. g. hanung got ha, of which (and which) hand. Hanungmu = whose, apart, or in reply. Hanungmu got = the hand of whom. Hanung got = which hand.

II.—Declension of Nouns.

Substantive.

1st.—*Substantives proper.*

Lóncho, a man, m.

N.	Lóncho.
G.	Lóncho, conj.* Lónchomu, disj.
D. Ac.	Lóncho.
L.	Lónchobe.
Ab.	Lónchokhen.
Ins.	Lónchoha.
Soc.	Lónchonung.

Dual.

N.	Lóncho nakpo.†
G.	Lóncho nak pum,‡ conj. Lóncho nak pumu, disj.
D. Ac.	Lóncho nakpo.
Loc.	Lónchonak pube.
Abl.	Lóncho nakpukhen.
Ins.	Lóncko nakpuhá.
Soc.	Lóncho nakpu nung.

Plural.

N.	Lónchokhata.†
G.	Lónchokhatam,‡ conj. Lóncho khatamu, disj.
D. Ac.	Lóncho khata.
L.	Lóncho khabe.
Abl.	Lóncho khata khen.
Soc.	Loncho khata nung.

Thus also is declined the feminine noun mescho, a woman, the epicene noun singtong, mankind, and all such without reference to gender. Neuters also are similarly declined. But I add a specimen.

Sing, wood, a neuter.

N.	Sing.
G.	Sing, conj. Singmu, disj. &c.

Dual.

N.	Náng sing (náng is a contraction of Náyung) or Sing nayung.
G.	Nang sing, conj. Nang singmu, disj. &c.

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* The first of 2 substantives is by position alone a genitive, as loncho got, the man's hand. But apart, it must have the sign, as lonchomu, the man's.

† Generally in the Himalayan languages, the dual and plural signs are eschewed in regard to substantives proper except where ambiguity would arise from omitting them. In regard to appellatives and qualitives used substantivally, as all may be, these signs are always annexed and also those of gender, because such words, (and pronouns of the 3rd person also, to which the same rule applies) unlike the former tell nothing of themselves on these points. Vayu, however, freely applies its dual and plural signs and its sex signs, where it has any, to all nouns and pronouns, though the structure of its verb renders such use of the dual and plural signs superfluous, e. g. béli imchimem, the sheep are sleeping. Newari, though void of such help, lacks a dual and plural of neuters.

‡ We should rather read nakpu and khata for the reason given in a prior note. Yet my informants, though they never apply the genitive to the conjunct form of this case in the singular, do so in the dual and plural.

Plural.

N. Sing khata.
G. Sing khata, conj. Sing khatamu, disj. &c.

2nd.—Participles used substantivally (Remark. When they are used adjectivally, which they all are to a great extent, they precede the noun and are immutable, like all other adjectives).

Tó'vi, he or she who beats, the beater, m. and f.

N. Tó'vi, m. f.
G. Tó'vi, conj. To'vimu, disj.
D. Ac. Tó'vi, &c.

Dual.

N. Tó'vi nakpu, m. Tó'vi nangmi, f.
G. Tó'vi nakpu, m. conj. Tó'vi nangmi, f. conj. Tó'vi nakpumu, m. disj. Tó'vi nangmimu, f. disj. &c. as before.

Plural.

N. Tó'vi khata, m. f.
G. Tó'vi khata, conj. To'vi khatamu, disj. &c. as before.

Topchyáng, neuter of the above, what one strikes with, as club, stick, &c.

N. Topchyáng.
G. Topchyáng, conj. Topchyángmu, disj. &c.

Dual.

N. Nang topchyáng.
G. Nang topchyáng, conj. Nang topchyángmu, disj. &c.

Plural.

N. Topchyáng kháta.
G. Topchyáng khata, conj. Topchyáng khatamu, disj. &c.

So also Topta, who or what has been beaten, m. f. n. with the requisite adaptation of nakpu, nangmi or náng (náyung) in the dual.

3rd.—Qualitives used substantivally, e. g.
Khakchhing-wo, m.
Khakchhing-mi, f.
Khakchhing-mu, n. and c.
} = the black one, being or thing.

This and all the like are declined as above. And so also are the qualitives which substitute the formative "cho" for "wo" in the masculine, as Bang-cho, a mature man; Bing-cho, a handsome man, &c. The feminines of these are in "mi" as in the last. They have no neuters in this form; but they can superadd the usual m. f. n., signs, as bang-cho-wo, a mature man, bang-cho-mi, a mature woman, bang-cho-mu, a mature thing, and then of course they have the complete hic, hæc, hoc of gender.

4th.—The numerals, inclusive of the adverbial ones.

5th.—Derivative qualitives formed from abstracts, as Daksa-wo, the covetous man, Daksa-mi, the covetous woman, from Daksa, covetousness. Choti-wo, the strong man; Choti-mi, the strong woman, Choti-mu, the strong thing, from Choti, strength. Suksa-wo, the hungry man; Suksa-mi, the hungry woman, from Suksa, hunger; and all such.

6th.—Nominal as well as pronominal genitives, which, with the m or mu formative, are all treated as distinct substantives, e. g. singmumu, the wooden one. (Remark. The cacophonous iteration of the mu (though often truncated in the second syllable, singmum) owing to the coincidence of the genitival and formative signs, makes the use of such words rare when a possessive case meaning must be assigned to them. They are used, however, freely in all other cases).

7th.—Simple or compound words indicating one's country, profession or avo-

cation and the like, and which are not expressed participially,* form yet another class of substantives, as Chhugong-wo = a Bhotia, or native of Tibet; Chhugong-mi, a Bhotini or female of Tibet; Héngong-wo (m.), Hengong-mi (f.), a male and female of Nepal proper; Gyétimnamsang-wo-mi, a male and female stranger or foreigner; Rakcho-wo-mi, a male and female ploughman, Bóchhó-wo-mi, a male and female European (white-body) Gáginmulung-wo-mi, a male and female of the plains. In short, nouns of whatever sort (and the above enumeration has been made here, though not strictly germain to grammar, expressly to show the various sorts of nouns and their mode of construction) and pronouns also, wherever used substantivally or disjunctly, and therefore declinable, all follow the above single form of declension. And, on the other hand every noun and pronoun when used conjunctly, that is, preceding a substantive which is thereby qualified, is always indeclinable, and, for the most part, altogether unchangeable, having no expressed grammatical affections whatever, the signs of genders being neglected in use even where they exist. Indeed qualifying and qualified words seem to be as much as possible regarded as constituting a single compound term; and, the more effectually to ensure this, one of the two elements (the one that goes first in the compound) is customarily truncated; thus rísa, a plantain, and singphum, a tree, make rísaphum; and topmung, to strike and rámum, I fear, make toprámum. And so also the inflexional forms of the personal pronouns which are used as qualifying or adjectival words, are to be regarded as quasi agglutinated and perfectly immutable prefixes of the substantive, entirely distinct from the correspondent pronouns of the possessive kind, which latter stand apart and are liable to declensional changes after the above model, like all other qualitives used substantivally or disjunctly.

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* The participles (in vi, ta, and táng) being inherently relative, assume a substantival character without the necessity of suffixing the usual appellative formatives in wo vel cho, and mi, though these may be superadded, if to mark the sex of the agent be specially required. Thus to'vi, the striker, the he or she who strikes, is not only an adjective, as to'vi ta'wo, the beating boy, but an independant noun, the beater. Nevertheless would you specify the sex, you can say to'vi-wo, the male striker and to'vi-mi, the female striker.

Vayu Verbs.

1st.—Conjugation of neuters, conjugated from the Sheer root.

Verb *Phi to come.*

Infinitive Mood.

Affirmative.—Phit'mung to come or to have come, aoristic.*
Negative.—Máng phit'mung, not to come, &c.

Gerunds.

Phit'he } Present. Coming { Phit'he with verbs in present tense.
Phit'nung } { Phit'nung with verbs in preterite.
Phit'hephit'he, or Phit'nung phit'nung, continuative present.
Phit'phit'ha. Past, having come.
Phit'singhe. Present or Future, when coming.
Phit'khen. Past, after coming, after having come.

Participles.

Phit'vi. Present and future, who or what comes or will come. Also the comer substantival.
Phis'ta. Past, who or what has come or came.
Phit'táng, Verbal nouns, Phit'chyang, Phit'lung, Phit'sing. } These forms expressing respectively *passive* futurity or fitness or habit, and instrumentality, locality and time, are hardly or not at all useable, save with verbs more or less transitive. See on to them in sequel.
N. B.—The medial t' and s' are merely enunciative, not formative.

Imperative Mood.

Singular.	*Dual.*	*Plural.*
Phí.	Phíchhe.	Phíne.
	Negative.	
Thá phí.	Thá phíchhe.	Thá phíne.

Indicative Mood.

Future tense, used also for preeent.

Singular.	*Dual.*	*Plural.*
1. Phígnom.	Phí chhokmi, excl. / Phí chhikmi, incl.	Phíkokmi, excl. / Phíkem, incl.
2. Phímí.	Phi chhikmi.	Phínem.
3. Phimi.	Phi chhikmi.	Phímem.
	Preterite tense.	
1. Phísungmi.	Phí chhongmi, excl. / Phí chhingmi, incl.	Phí kikóngmi, excl. / Phí kikengmi, incl.
2. Phímí.	Phí chhem.	Phínem.
3. Phímí.	Phí chhem.	Phímem.
	Subjunctive Mood.	
	Present tense.	
1. Phígno { nam or sa	Phi chhoknam, excl. / Phi chhiknam, incl.	Phí koknam, excl. / Phí kenam, incl.
2. Phi-nam-sa	Phi chhiknam.	Phine nam.
3. Phi-nam-sa	Phi chhiknam.	Phime nam.

* The infinitive is also used adjectivally and is nearly the same as the participle n "tang."

Preterite.

1. Phisung phen.	Phi chhong phen, excl. Phi chhing phen, incl.	Phí ki kóng phen, excl. Phí ki keng phen, incl.
2. Phí phen.	Phi chhe phen.	Phi ne phen.
3. Phí phen.	Phi chhe phen.	Phi me phen.

Interrogative Mood.

Present tense.

Singular.

1. Phigno ki má.
2. Phí ki má.
3. Phí ki má.

And so on, as in the subjunctive; that is, the terminal m or mi is dropt and ki má, = or not, is added in lieu of the subjunctive signs, nam or sa and phen.

Negative Mood.

There is no separate negative verb.

The affirmative verb is conjugated with má, the particle of negation, before it, Má phi gnom. Má phi sungmi, &c.

Potential Mood.

Singular.

1. Phit' phas chungmi.
2. Phit' phas chem.
3. Phit' phas chem.

For all tenses, phasche being aoristic except in dual and plural. Phasche, the reflex form of the verb phá, is conjugated with the root phi to express power. For phasche see im'che in sequel, or 5th conjugation.

Precative Mood.

Singular.

Present.	*Preterite.*	
1. Phi gnó yu.	Phisung yu.	Drops the final m or mi of the ordinary verb and substitutes for it the immutable verbal particle yú.
2. Phi yu.	Phi yu.	
3. Phi yu.	Phi yu.	

Another form of the precative mood, equivalent to that which is usually joined with the imperative in English (let me come, come thou, let him come, &c.) is formed by compounding the infinitive of the main verb with the verb to give used as an auxiliary, thus:—

Singular.	*Dual.*	*Plural.*
1. Phimung hásung.	Phimung háchhong.	Phimung hátikong.
8. Phimung háto.	Phimung hátochhe.	Phimung hátome.

The first ordinary form of the precative may be best rendered in English by O! that I may or might come, &c.; this, by, Let me come, Let him come &c., literally, give me to come, give him to come, and so on for the dual and plural according to the model of transitives in "to" in sequel.

Optative Mood.

Singular.

1. Phit' dakgnom,	Phit' daksungmi,	and so on throughout the verb dak to desire or want, which see in sequel. The root of the primary verb is prefixed.
2. Phit' dakmi,	Phit' dángmi,	
3. Phit' dakmi,	Phit' dángmi,	

Remark.—Duty, necessity and propriety, as well as desire, are expressed by this mood, often in the impersonal form, mihi oportet vel decet, thus go phit dakmi, I must, I ought to, come. It is necessary or proper for me to come.

Inchoative Mood.

Singular.

1. Phit' teschungmi,
2. Phit' teschem,
3. Phit' teschem,

and so on according to the paradigm of intransitives in che; this mood being constructed from the root of the main verb and the reflex form of the verb to begin.

Finitive Mood.

Singular.

1. Phit' chuschungmi,
2. Phit' chuschem,
3. Phit' chuschem,

} and so on, as before noted, chusche being the reflex form of the verb to end.

Duty and necessity are expressed by the same word as wish or want, dak: consequently the optative mood includes the former two. What it is good for one to do, what is expedient or right, is expressed nearly as in English, e. g. Go phimung noh'ka, = it is good for me (mihi) to come, &c.

Causal Mood.

Present.	*Preterite.*	
1. Phit' pingsungmi,	Phit' ping kungmi,	and so on for dual and plural throughout the verb pingko, which see. The root of the primary verb is prefixed.
2. Phit' pingmi,	Phit' ping kum,	
3. Phit' pingmi,	Phit' ping kum,	

Continuative Mood.

Present Tense.

Singular.	*Dual.*	*Plural.*
1. Phína phit'nognom.	Phína phit'nochhokmi. / Phína phit'nochhikmi.	Phína phit'nokokmi. / Phína phit'nokem.
2. Phína phit'nonum.	Phína phit'nochhikmi.	Phína phit'nonem.
3. Phína phit'nomi.	Phína phit'nochhikmi.	Phína phit'nomem.

Preterite.

1. Phína phit'nosungmi.	Phína phit'nochhongmi. / Phína phit'nochhingmi.	Phína phit'nokikongmi. / Phína phit'nokikengmi.
2. Phína phit'nonum.	Phína phit'nochhem.	Phína phit'nonem.
3. Phína phit'nomi.	Phína phit'nochhem.	Phína phit'nomem.

Reciprocal Mood.

Present Tense.

1. Phina phit'pánchungmi.	Phina phit'pánachhokmi. / Phina phit'pánachhikmi.	Phina phit'páchikokmi. / Phina phit'pachikem.
2. Phina phit'pánchem.	Phina phit'pánachhikmi.	Phina phit'páchinem.
3. Phina phit'pánchem.	Phina phit'pánachhikmi.	Phina phit'páchimem.

Preterite.

1. Phina phit'pánchungmi.	Phina phit'pánachhongmi. / Phina phit'pánachhingmi.	Phina phit'páchikongmi. / Phina phit'páchikengmi.
2. Phina phit'pánchem.	Phina phit'pánachhem.	Phina phit'páchinem.
3. Phina phit'pánchem.	Phina phit'pánachhem.	Phina phit'páchimem.

Remark.—Of the above two the first mood is formed by the root repeated with intervening reflex sign, and the substantive verb nó, to be. The second is formed by the same treatment of the root and the reflex form of the verb pá, to do, for which see conjugation V. The 2nd or reciprocal mood is hardly useable in the singular number. According to this paradigm of the neuter verb to come, are conjugated also the verbs Gá to be dilatory, Jí, to ripen (fruit), Rí, to rot, Sé, to fruit, Gó, to live, Yú, to descend, Ví, to be intoxicated, Phwé to quarrel, and, in a word, all words presenting a sheer root in the imperative and which are all neuters. Essentially the same is the conjugation of neuters having added to the sheer root a conjunct and now (quoad force or meaning) obsolete consonant* which consonant, however, according as it is labial, guttural or dental, occasions some slight

* Compare the so-called "euphonic additions" to the root in the cultivated Dravirian tongues.

variations in the form of conjugation. Nasal endings make no change (e. g. dong gnom, dongmi, dongmi). I subjoin a sample of each variation.

2nd.—Conjugation of neuters with a conjunct guttural, Dak', to desire (Da-k).

Infinitive Mood.

Affirmative. Dakmung, } ut supra.
Negative. Máng dakmung, }

Gerunds.

Dak he, } ut supra.
Dak nung, }
Dak he dak he, }
Dak dak ha, }
Dak sing he, }
Dak khen }

Participles.

Dakvi, } ut supra.
Dakta, }
Daktang, }
Verbal nouns, }
Dak chyang, } not useable.
Dak lung, }
Dak sing, }

The negative of all is formed as in the infinitive, Máng dak he, Máng dak vi, &c.

Imperative Mood.

Singular.	*Dual.*	*Plural.*
Dak'	Dakchhe.	Dángne.
	Negative Imperative.	
Thá dak.	Thá dakchhe.	Thá dángne.

Indicative Mood.

Present Tense.

Singular.	*Dual.*	*Plural.*
1. Dak gnom.	Dak chhokmi, excl. / Dak chhikmi, incl.	Dak kokmi, excl. / Dak kem, incl.
2. Dakmi.	Dak chhikmi.	Daknem.
3. Dakmi.	Dak chhikmi.	Dakmem.

Preterite.

1. Daksungmi.	Dak chhongmi. / Dak chhingmi.	Dak'ki kongmi, or Dáki kongmi. / Dak'ki kengmi, or Dáki-kengmi.
2. Dángmi.	Dak chhem.	Dak nem or Dángnem.
3. Dángmi.	Dak chhem.	Dakmem.

This conjugation changes the radical k into ng and lengthens the vowel.

The other moods as before.

Thus are conjugated Buk', to get up, Bok', to be born, Bek', to enter, Lok', to issue, to appear, Gik', to flow, Kák', to shine (sun), Chok', to glow (sun), Jik' to be broken, Jok', to come up, Duk,' to fall from aloft, Ruk', to fall on ground, Ok', to weep, Juk' to be wise, and all such words, as also the compounds épidak cacare, chépi dák mingere, Tídak, to be thirsty.

3rd.—Conjugation of neuters with a conjunct labial (m or p): I. in m. Dam to be full and to be lost, or to fill and to lose in the intransitive senses.*

Infinitive and participles as before.

Imperative.

Affirmative.	Dam.	Damche.	Damne.
Negative.	Thá dam.	Thá damchhe.	Thá damne.

* The Vayu neuter and passive conjugations coincide and the expressions often tally with the equivalent English ones as dámi, it is lost, and it is filled or full, that is, self-lost and self-filled. But the Vayu reflex verb, like the French, can express the latter meaning otherwise, viz. by damchem which is equivalent to dámi used neutrally. Dam lá lam is another equivalent form answering literally to Khógíya in Urdu though Vayu never forms its passives like Urdu.

Indicative Mood.

Present Tense.

1. Dámum (Dammum).	Dam chhokmi, excl.	Dámpopmi.	This conjugation changes gnom into mum and kokmi, kem into popmi, pem, besides lengthening the vowel.
	Dam chhikmi, incl.	Dámpem.	
2. Dámi.	Dam chhikmi.	Damnem.	
3. Dámi.	Dam chhikmi.	Dámem.	

Preterite.

1. Dam sungmi.	Dam chhongmi, excl.	Dámpi kongmi.	
	Dam chhingmi, incl.	Dámpi kengmi.	
2. Dámi.	Dam chhem.	Damnem.	
3. Dámi.	Dam chhem.	Dámem.	

The other moods as before. In subjunctive, Dámonam, Damnam Damnam. Thus also conjugate Ram to be afraid, Dum to become, &c. II. in p.

Jyóp' to be tired.

Imperative.

Aff. Jyóp.'	Jyop'chhe.	Jyómne.	This conjugation changes p into m and lengthens the vowel. As in the last kokmi, kem become popmi, pem.
Neg. Thá jyop.	Thá jyop'chhe.	Thá jyóp'ne.	

Indicative.

Present.

1. Jyop' mum.	Jyop chhokmi, excl.	Jyoppopmi.	
	Jyop chhikmi, incl.	Jyoppem.	
2. Jyop'mi.	Jyop chhikmi.	Jyopnem.	
3. Jyop'mi.	Jyop chhikmi.	Jyopmem.	
1. Jyop sungmi.	Jyop chhongmi.	Jyópikongmi.	
	Jyop chhingmi.	Jyópikengmi.	
2. Jyómi.	Jyop chhem.	Jyómnem.	
3. Jyómi.	Jyop chhem.	Jyómem.	

Other moods as before. Subjunctive has jyop'monam, jyop'nam, jyopnam Jyopsung phen, Jyóm phen, Jyóm phen.

Thus also conjugate Thíp, to set, (sun), Yép, to be sharp-edged, &c.

4th.—Conjugation of neuters with conjunct dental (t).

Hot', to utter, talk.

Infinitive and participles and gerunds as before.

Imperative Mood.

Singular.	*Dual.*	*Plural.*	
Aff. Hot'.	Hoschhe.	Hóne.	This conjugation changes the t into n, and retains the t before the plural kokmi kem, which are unchanged. It lengthens the vowel as usual.
Neg. Thá hot'.	Thá hoschhe.	Thá hóne.	

Indicative present.

1. Hot' gnom.	Hoschhokmi, excl.	Hot'kokmi.	
	Hoschhikmi, incl.	Hot'kem.	
2. Hot'mi.	Hoschhikmi	Hot'nem.	
3. Hot'mi.	Hoschhikmi	Hot'mem.	

Preterite.

Singular.	*Dual.*	*Plural.*
1. Hosungmi.	Hoschhongmi.	Hotikong mi.
	Hoschhingmi.	Hotikeng mi.
2. Hónmi.	Hoschhem.	Hónem.
3. Hónmi.	Hoschhem.	Hónmem.

Thus conjugate Pat', to fight, Met' to die, But', to flower, &c.

Remark.—The verbs dung to be dry, dong to arrive, then to win, Yáng, to lose or decrease, Min, to be ripe, Hon, to be big, Bon, to fly, Lun, to run, and all others ending in a nasal (n or ng) follow without change the sheer root paradigm, or phí aforesaid.

5th.—Conjugation of reflex or active intransitive (including also some neuters) verbs in che, that is, which have this (the only) reflex sign added to their root in the imperative which always strikes the key note to the several conjugations, always having the formative affix whenever there is one.

Im, to sleep.

Infinitive Mood.

Aff. Immung. To sleep or to have slept } aoristic.
Neg. Máng immung. Not to sleep, &c. }

Remark.—I-mung is as often used as immung. So that í may possibly be the root, not im.

Gerunds.		*Participles.*		
Im he,	} ut supra.	Imvi (invi),	} not useable,	} ut supra.
Im nung,		Imta (imta),		
Im im há,		Imtáng		
Im sing hé,		Verbal nouns		
Im khen,		Imchyáng,		
		Imlung,		
		Imsing,		

Negatives, as in infinitive, that is, by prefixing máng.

Imperative Mood.

Singular.	*Dual.*	*Plural.*
Aff. Imche.	Im náchhé.	Imchíné.
Neg. Thá imche.	Thá imnáchhé.	Thá imchiné.

Indicative Present.

1. Imchungmi.	Imnachhokmi. / Imnachhikmi.	Imchikokmi. / Imchikem.
2. Imchem.	Imnachikmi.	Imchinem.
3. Imchem.	Imnachikmi.	Imchimem.

Preterite.

1. Imchungmi.	Imnachongmi. / Imnachingmi.	Imchikongmi. / Imchikengmi.
2. Imchem.	Imnachhem.	Imchinem. / Imchimem.
3. Imchem.	Imnachhem.	

Thus are conjugated all reflex verbs whatever, having the che sign whether they be primitive or derivative (and all transitives can be so commuted) as chikche, to remember, mángche, to forget, lische, to learn, musche, to sit, ipche, to get up, khokche, to walk, pipche, to suck, sipche, to wake, lipche, to vomit, popche, to lick, kinche, to lie hid, lunche, to run, dénche, to bathe, upche, to wash one's self, tesche,* to begin, chusche, to end, khwénkhwén pánche, to cough, khikche, to sneeze, líche, to grow (plant only), gosche, to be rich, vekche to contain, dosche, to sustain or hold up, dunché, to dig for one's self, phasche, to be able,

---

* Tesche gives, teshto set free, wonche, gives wonto, in comparison, be able.

wónche,* to master one's self, be patient or firm, bongche* to be happy, giwón pónche, to keep silence, rusche, to flee away, kwompánche, to sing, yángche, to decrease or lose, jonche, to grow or increase (animal only), yukche, to cut one's self, sische, to kill one's self, tánche to put for one's self, senche, to know one's self, or to know simply, hánche, to give to one's self, phokche, to beget or give birth to for one's self, ingkche, to buy, jyápche, to exchange, khwásche, to tighten one's self, *Kh*wásche, to feed one's† self; túnkoche, to drink, jánkoche, to eat, chénche,‡ to piss, topche, to beat one's self, yosche, to like, &c. &c.

Remark.—These verbs are aoristic in fact, though in the dual and plural they are obliged to accommodate themselves to the inflexable forms of those numbers and such (by and by will be seen) is the case also with the aoristic transitives in "to." The reflex duals and plurals however always retain their own special signs or na and chi which are interchangeable for the sake of euphony, na being preferred to "chi" in the dual to prevent cacophonous repetition of the ch.

6th.—Conjugation of transitives in "to" not having a precedent sibilant.

The verb há, to give.

Infinitive Affirmative.

Hámung, to give or to have given, aoristic.

Infinitive Negative.

Máng hámung. Not to give, &c.

Gerunds.

Há he. Hánung.	Present, giving { with main verb in present or future with main verb in preterite.
Háhe háhe. Hánung hánung.	Continuative present, continually giving.
Háhá ha.	Past. Having given.
Há singhe.	Present or future. When giving.
Há khen.	Past. After having given, after giving.

Participles.

Hávi.	Who gives or gave or will give, aoristic. The giver.
Háta.	Past (passive). Who or what has been given. The given.
Hátáng.	Future passive. What will be given, what customarily given, what fit to be given.

Verbal Nouns.

Háchyáng.	Expresses the instrument, as háchyáng gót, the hand that gives. It is also used substantively in a neuter sense, thus topchyang, a hammer. Hammerer is to'vi.
Hálúng.	Expresses the place, hálúng, the place of giving.
Hásing.	Expresses the time, hásíng, the time of giving.

The negative of gerunds, participles and verbal nouns is expressed, as in the infinitive, by the prefix máng, máng háhe, máng hávi, &c.

Imperative Mood.

Singular.	*Dual.*	*Plural.*
Aff. Háto.	Háchhe.	Háne.
Neg. Thá háto.	Thá háchhe.	Thá háne.

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* Tesche, gives, teshto, set free, wonche, gives, wonto, in comparison be able.

† *Kh* underlined is the Arabic guttural.

‡ Chénche of this sort from chént.

Dual and Plural of Object.

* { Dual. Hátochhé. Give to them two.
{ Plural. Hátomé. Give to them all.
Negative. Thá hátochhé. Thá hátome.

Indicative Mood.

Present or future.

Singular.	*Dual.*	*Plural.*
1. Hátungmi.	{ +Háchhokmi, excl. { +Háchhikmi, incl.	{ Hátikokmi, excl. { Hátikem, incl.

Dual and Plural of Object.

* { 1. Hátungchhem. I give to them two.
{ 1. Hátungmem. I give to them all.
2. Hátum. +Háchhikmi. +Hánem.

Dual and Plural of Object.

* { 2. +Hátochhem. Thou givest to them two.
{ 2. +Hatomem. Thou givest to them all.
{ 3. +Hátum. +Hátochhem. +Hátomem.

Dual and Plural of Object.

* { 3. +Hátochhem. He gives to them two.
{ 3. +Hátomem. He gives to them all.

Preterite.

1. Hátungmi.	{ Háchhongmi, excl. { Háchhingmi, incl.	{ Hátikongmi, excl. { Hátikengmi, incl.

Dual and Plural of Object.

* { 1. Hátungchhem. I gave to them two.
{ 1. Hátungmem. I gave to them all.
{ 2. Hátum. +Háchhem. +Hánem.

Dual and Plural of Object.

* { 2. Hátochem. Thou gavest to them two.
{ 2. Hátomem. Thou gavest to them all.
3. +Hátum. +Hátochhem. +Hátomem.

Dual and Plural of Object.

3. +Hátochhem. He gave to them two.
3. +Hátomem. He gave to them all.

Negative Mood.

Singular Indicative present.

1. Má hátungmi.
2. Má hátum.
3. Má hátum.

{ Dual and plural in like manner, merely by prefixing the negative particle má. N. B.—Háto and all other transitives of its class, are essentially aoristic. See remark aforegone.

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* The bracketed portions express peculiar forms of this language.

The mark + before any form signifies that it belongs also to the passive which see. The difference is expressed in such cases by the use of the separate prefixed pronouns in the instrumental case for the active; in the objective or accusative case for the passive, or g'ha, gonha, wathiha, and go, gon wathi for the three persons singular and so on for dual and plural.

Interrogative Mood.

Singular Indicative present.

1. Hátung ki má.
2. Háto ki má.
3. Háto ki má.

} Dual and plural in like manner and all the rest of the verb also; that is, cut off the final mi or m and substitute ki má.

Potential Mood.

Singalar Indicative present.

1. Há wóntungmi,
2. Há wón̲tum,
3. Há wón̲tum,

} and so on through the rest of the verb; wón̲to, to can, being conjugated like háto, the root of which is prefixed merely (wón̲to is used with transitives and phásche with intransitives).

Optative Mood.

Singular Indicative present.

1. Há dakgnom,
2. Há dakmi,
3. Há dakmi,

} and so on through the rest of the verb dak, to wish or want, as before given. The root of the main verb is prefixed as before.

Precative Mood.

(That I may give).

Singular Indicative present.

1. Hátung yu.
2. Háto yu.
3. Háto yu.

} And so on, after the manner of the interrogative mood as to the main verb, to which is added the immutable verbal root expressive of wish in the nature of prayer, hátung yu = o! si mihi accedat dare.

Remark.—The solicitive form, let me give, let him give, há hásung, há háto is seldom used owing to the iteration of the same root in two different senses.

Subjunctive Mood.

Present.	*Preterite.*	
1. Hátung nam.	Hátung phen,	} and so on for dual and plural.
2. Háto nam.	Háto phen,	
3. Háto nam.	Hato phen,	

Continuative Mood.

1. Há na há nógnom,*
2. Há na há nónum,
3. Há na há nómi,

} and so on as in the neuter verb phí.

Reciprocal Mood.

1. Há na há pán̲chungmi,†
2. Há na há pán̲chem,
3. Há na há pán̲chem,

} and so on as before with reflex of the root pá, to make, conjugated like im-che.

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* The reflex form of the verb mu, to sit, imperative musche, is often used in this sense há na há muschungmi, muschem, muschem, &c. like imche. So Newári has bíye chona = I sit giving, I remain giving.

† The transitive form of pá, to do, is sometimes preferred to the reflex, Háhá pángmi, pómi, pómi, &c. See conjugation 10th.

Causal Mood.

Imperative.

Singular.	*Dual.*	*Plural.*
Aff. Há píngko.	Há píngchhe.	Há píngne.
Neg. Há thá píng.	Há thá pingche.	Há thá píngne.

Indicative present.

1. Há pingsúngmi,
2. Há píngmi,
3. Há pingmi,

and so on according to the form of conjugating the transitive verb píngko, which see in sequel and to which the root of the main verb is prefixed when causation is expressed.*

Passive Voice.

Imperative Mood.

Aff. Hásung. Give thou to me.	Háchhong. Give thou to us two.	Há ki kóng. Give thou to us all.
Neg. Thá hágno.	Thá háchhok.	Thá há kók.

Dual and plural of agent.

Hásúng chhé. Do ye two give to me.
Hásúng né. Do ye all give to me.
Thá hásúng chhé. } The negative forms.
Thá hásúng né. }

Indicative Mood.

Present.

Singular.	*Dual.*	*Plural.*
1. Hágnom = gives to me.	+Háchhokmi, excl. +Háchhikmi, incl. = gives to us two.	Hákókmi, excl. Hákém, incl. = gives to us all (subaudi ille vel iste).

Dual and plural of the agent.

1. Hágnochhem.	Give to me they two (or ye 2).	
1. Hágnomem.	Give to me they all.	
2. Hámi.	+Háchhikmi.	+Hánem.

Dual and plural of agent.

2. Hámi.	Give to thee they two.	
2. Hámi.	Give to thee they all.	
3. +Hátum.	+Hátochhem.	+Hátomem.†

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* Causal verbs have all the complete forms of conjugation proper to primary verbs; and, as they are constituted by transitives, they take, like transitives, the reflex and passive and double objective forms, being conjugated from pingche and pingsung and ping (k) to, as well as pingko. The reflex of háto is hángche, conjugated like imche: the quasi passive is hásúng, for which see on. Háto has no doubly objected form. Itself expresses give it to him or give him.

† The forms marked with a cross precedent (+) are common to both voices. See active. There is no infinitive of this quasi passive. The causal transitive which carries a passive as well as active sense has it, thus Hámung, to give, hápingmung, to be given, more properly, to cause to give. So Newári has bíye, to give, bíyeke (ke the causal sign) to be given or cause to give. Newári has no other semblance even of a passive. Váyu with its suffixed objective forms of the pronoun has, as above seen. But this again is weakened by the special restriction of the suffixes, thus hánum, gives or gave to thee, *I only* and no other.

Dual and plural of agent.

3. +Hátochhem. Give to him they two.
3. +Hátomem. Give to him they all.

Preterite.

Singular.	*Dual.*	*Plural.*
1. Hásúngmi.	+ Hachhongmi, excl. / Hachhingmi, incl.	Hakikongmi, excl. / Hakikengmi, incl.

Dual and plural of agent.

1. Hasungchhem. Gave to me they two (or ye two).
1. Hasungmem. Gave to me they all (any).
2. Hámi. +Háchem. +Hánem.

Dual and plural of agent.

2. Hámi. Gave to thee they two.
+2. Hámi. Gave to thee they all.
+3. Hátum. +Hátochhem. +Hátomem.

Dual and plural of agent.

3. +Hátochhem. Gave to him they two.
3. +Hátomem. Gave to him they all.

A second passive may be formed by the passive participle and substantive verb, of clear meaning, but eschewed owing to the relative sense inherent in the participles.

Indicative present singular.

1. Háta nógnom.
2. Háta nónum.
3. Háta nómi.

And so on through the verb nó, to be—an irregular verb which is given in the sequel. *Remark.*—To this responds hávi nógnom of the active voice.

Passive potential.

(I can be given).

Present singular.

1. Há wóngnom.
2. Há wónmi.
3. Há wóntum.

Preterite.

1. Há wónsungmi.
2. Há wónmi.
3. Há wóntum.

And so on through dual and plural, the passive of wónto being conjugated like that of háto.

Passive precative.

(That I may be given).

Present singular.

1. Hágnoyu.
2. Háyu.
3. Hátoyu.

Preterite.

1. Hásungyu.
2. Háyu.
3. Hátoyu.

And so on through dual and plural, according to the passive forms of háto less the final mi, or m which is drop, and the immutable verbal particle yú, subjoined.

Remark.—Observe that in the potential mood, as in the causal below, the expression of the passivity is transferred from the truncated main verb, which shows only its crude root, to the secondary verb.

Passive Causal.

(I am caused to be given (or to give)).

Present.	Preterite.
1. Há pínggnom.	1. Há píngsúngmi.
2. Há píngmi.	2. Há píngmi.
3. Há píngmi.	3. Há pingnum.

And so on through dual and plural, following the conjugational forms of the passive voice of the verb píngko, to send, which see.

Passive Subjunctive.

(If I be given).

1. Há gno nam. 2. Há nam. 3. Háto nam.	Present.	1. Hásúngphen. 2. Há phen. 3. Háto phen.	Preterite.

Like the precative, only substituting the subjunctive particles for the single precative one. And the interrogative mood of the passive merely substitutes the particle of interrogation or kimá, hágnoki má, &c.

Special forms.

Active or passive, = agento objective.

1st.—I to thee.

Hánum.	Give or gave to thee I only.	Aoristic.
Hánochhem.	Give or gave to you two I only.	
Hánonem.	Give or gave to you all I only.	

2nd.—Thou to me.

γHágnom.	Givest to me thou (or he).	Present tense.
γHágnochem.	Give to me ye two (or they two)	
Hágnonem.	Give to me ye all only.	
γHásungmi.	Gavest to me thou.	Preterite.*
γHasungchhem.	Gave to me ye two.	
Hásungnem.	Gave to me ye all.	

Thus are conjugated all transitives in "tó" that have the root only precedent, as Wóto, to cleanse, Láto, to snatch away, Chíto, to split, Jito, to tear, Phóto, to eradicate, Chéto, immingere, Ríto, to cause to rot or rot it, Líto, to cause to grow, or grow it, &c. The verbs with a "p" before the sign, as lipto, to vomit, napto, to compress, change the p into m in the plural imperative and in the second person plural preterite, as namne, do ye all compress, and namnem, ye all compressed. Those with a "k" before the sign, as thiktó, to shut, khikto, to cause to sneeze, change the k into ng, as thingne, do ye all shut, and thingnem, ye all shutted it. No other precedent letter makes any change, save the sibilant to which we shall next proceed as forming a different conjugation. Meanwhile conjugate as above yángto, to decrease, bongto, to please, Mangto, to cause to forget or to forget him, phimto, to depress, khámto, to summon, *kh*amto, to frighten, Thento, to cause to win, Yemto, to burn, Umto, to burn corpse, Wónto, to win, to be able,† Pélto, to wring or extract juice, Tamto, to cry out, Damto, to fill, &c. &c.

7th conjugation of verbs in "tó" having a precedent sibilant (always palpably felt in the reflex, sometimes not so in the transitive, wherein something like an abrupt tone, however, indicates in such cases its latent presence, or else a sound like English th, or ph, as phá'to, múphto, hóthto for phásto, músto and hósto. But observe, there is no true tone as in the 8th and 11th conjugations (to'po and pho'ko) and the real euphonic intercalary letter is the sibilant, s).

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* The forms preceded by the mark γ are not special but are repeated here to illustrate such as are special. Compare the whole with those of the Peruvian language of America apud Markham, p. 397. There are slight differences indicating diverse degrees of decomposition, but the resemblance in substance and principle is wonderful. I commend it to those who so dogmatically tell us it is not legitimate philology to heed such coincidences.

† This neuter sense of wonto is restricted to its use as a compound, and it is so used only with transitives. With intransitives the reflex form of phá to be able is employed: top wontum, he can beat: imphaschem, he can sleep.

The verb sí, to kill.

Infinitive.

Aff. Sit'mung, to kill, to have killed, } aoristic.
Neg. Máng sit'mung, not to kill, &c. }

Gerunds.

Sit'he,
Sit'nung.
Sit'he sit'he,
Sit' sit'ha,
Sis' singhe,
Sit' khen.
} ut supra.

Participles.

Sit'vi,
Sista,
Sistang,
} ut supra.

Verbal Nouns.

Sischyáng,
Sitlúng,
Sitsíng,
} ut supra.

Their negatives are formed by prefixed máng, mángsit'he, mángsit'vi, &c.

Imperative.

Singular.	*Dual.*	*Plural.*
I. Sisto.	Sischhe.	Séné ? Sitne.
	Dual and plural of object.	
II. Sistochhé.	Do thou kill them two.	
III. Sistome.	Do thou kill them all.	
	Negatives.	
I. Thá sit.'	Thá sischhe.	Thá séné ? Sitne.
II. Thá sit'chhik.	Kill not them two.	
III. Thá sit'me.	Kill not them all.	

Indicative present.

Singular.	*Dual.*	*Plural.*
1. Sinmi.*	+ { Sischhokmi, excl. / Sischhikmi, incl.	+ { Sitkokmi, excl. / Sitkem, incl.
	Dual and plural of agent.	
1. Sinchhem.	I kill them two.	
1. Sinmem.	I kill them all.	
2. +Sitmi.	+Sischhikmi.	+Sitnem.
	Dual and plural of object.	
2. Sischhikmi.	Thou killest them two.	
2. Sitmem.	Thou killest them all.	
3. +Sitmi.†	+Sischhikmi.	+Sitmem.

* Another form, = sinmi, sitmi, sitmi, is sitvi nognom, sitvi nonum, sitvi nomi, and so on, formed by active participle and substantive verb.

† Compare with sinmi, sitmi, sitmi, the correspondent syána, syáta, syáta of Newári. The root (sí, sá· vel syá) and the augments (n and t) are alike and alike disposed, that is, the augment following the root. So also in both tongues the augment of the 2nd and 3rd person, or t, constitutes the passive in all 3 persons si-t-gnom; sí-t-mi, sí-t-mi = Newári syá-ta, syá-ta, syá-ta. The si-t of the one is precisely the sya-t or sha-t of the other, the t being that mark of action, apart from one's own, whereby the passive (with the help of the separate prefixed objective pronoun in both tongues alike) is denoted. And yet these two languages have all the superficial marks of wide contrariety and opposition. In the vocabulary I have pointed attention to identical roots or words used verbally in one of these tongues, substantivally in the other, or of which the one has the primitive, the other the derivative. What I would imply is that identical roots and constructive principles may be found in this family of tongues where one would least expect to find them.

Dual and plural of object.

3. +Sischhikmi. He kills them two.
3. +Sitmem. He kills them all.

Preterite.

1. Sistungmi. + { Sischhongmi, excl. / Sischhingmi, incl. } + { Sistikóngmi, excl. / Sistikéngmi, incl. }

Dual and plural of object.

{ 1. Sistungchhem. / 1. Sistungmem. } I killed them two. / I killed them all.
2. Sistum. +Sischhem. +Sénem ? Sitnem.*

Dual and plural of object.

{ 2. Sistochhem. / 2. Sistomem. } Thou killedst them two. / Thou killedst them all.
3. +Sistum. +Sistochhem. +Sistomem.

Dual and plural of object.

{ 3. +Sistochhem. / 3. +Sistomem. } He killed them two. / He killed them all.

Negative Mood.

Present.	*Preterite.*	
1. Má sinmi.	1. Má sistungmi.	
2. Má sitmi.	2. Má sistum.	
3. Má sitmi.	3. Má sistum.	
&c.	&c.	&c.

Interrogative Mood.

Present.	*Preterite.*
1. Sinki má.	1. Sistung ki má.
2. Sitki má.	2. Sistó ki má.
3. Sitki má.	3. Sistó ki má.

Potential Mood.

Aoristic.

1. Sit wóntongmi.
2. Sit wóntum.
3. Sit +wóntum.

{ and so on, like háto which also is aoristic in singular, though in dual and plural it is tensed and also in the passive voice.

Optative Mood.

Present.	*Preterite.*	
1. Sit +dakgnom.	1. Sit +daksungmi,	} &c. like dak aforegone.
2. Sit +dakmi.	2. Sit +dángmi,	
3. Sit +dakmi.	3. Sit +dángmi,	

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* Sénem, like Séne in the imperative must be an error though insisted on to me. Séko, to know, gives Sénem and Séne, regularly as Sisto, to kill, gives Sitnem and Sitne. In the intransitives we have respectively senche and sische.

Precative Mood.

(That I may kill).

Present.	*Preterite.*
1. Sin yu.	1. Sistung yu,
2. Sit yu.	2. Sisto yu,
3. Sit yu.	3. Sisto yu,

{ &c. as in the uncompounded verb.

Subjunctive Mood.

Present.	*Preterite.*
1. Sinnam.	1. Sistungphen,
2. Sitnam.	2. Sistophen,
3. Sitnam.	3. Sistophen,

{ and so on as in the uncompounded verb.

Continuative Mood.

Present.	*Preterite.*
1. Sit'nasit' nógnom.	Sit'nasit' nósúngmi,
2. Sit'nasit' nónum.	Sit'nasit' nónum,
3. Sit'nasit' nómi.	Sit'nasit nómi,

{ and so on conjugating the auxiliar after the model of phi.

Reciprocal Mood.

1. Sit'nasit' pánchúngmi,
2. Sit'nasit' pánchem,
3. Sit'nasit' pánchem,

{ &c. after the model of imche, which, like all intransitives in che, is aoristic.

Causal Verb.

As before in all respects.
See Háto.

Passive Verb.

Imperative Mood.

	Singular.	*Dual.*	*Plural.*
Aff.	Sissúng.	Sischhóng.	Sisti kóng.
Neg.	Thá sitgnó.	Thá sischhók.	Thá sit kók.

Dual and plural of agent.

Aff.	Sissungchhé.	Do ye two kill me.
	Sissungné.	Do ye all kill me.
Neg.	Thá sitgnochhé.	Do ye two not kill me.
	Thá sitgnoné.	Do ye all not kill me.

Indicative present.

Singular.	*Dual.*	*Plural.*
1. Sit gnom = kills me (subaudi ille vel iste).	+Sischhokmi, excl.	+Sit kókmi, excl.
	+Sischhikmi, incl. = kills us two.	+Sit kém, incl. = kills us all.

Dual and plural of agent.

1. Sit gnochhem.	Kill me they two (or ye two).	
1. Sit gnomem.	Kill me they all.	
2. +Sitmi.	+Sischhikmi.	+Sit'nem.

Dual and plural of agent.

2. Sitmi.	Kill thee they two (or we two).	
2. Sitmi.	Kill thee they all (or we all).	
3. +Sitmi.	+Sischhikmi.	+Sitmem.

Dual and plural of agent.

{3. +Sischhikmi. Kill him they two (or ye two).
{3. +Sitmem. Kill him they all.

Preterite.

1. Sissungmi. {+Sischhóngmi, excl. {+Sistikóngmi, excl.
{+Sischhíngmi, incl. {+Sistikéngmi, incl.

Dual and plural of agent.

{1. *Sissungchhém. Killed me they two (or ye two).
{1. Sissungmém. Killed me they all.
2. Sinmi. Sischhem. Senem? Sitnem.

Dual and plural of agent.

{2. Sinmi. Killed thee they two (or we two).
{2. Sinmi. Killed thee they all (or we all).
3. Sistum. Sistochhem. Sistomem.

Dual and plural of agent.

{3. Sistochhem. Killed him they two.
{3. Sistomem. Killed him they all.

Second form of the Passive.

Infinitive Mood.

Aff. Sista {nót'mung, to be / dúmung, to become} killed.

Neg. Sista {máng not'mung, / máng dúmung,} {not to be / not to become} killed.

Gerunds.

Sista nót'he, dúmhe,
Sista not'nung, dumnung,
Sista not'not'há, dumdumha,
Sista not'singhe, dumsinghe,
Sista not'khen, dumkhen,
} ut supra.

Participles.

Sista not'vi or dumvi,
Sista no'ta or dumta,
Sista no'táng, dumtáng,
} ut supra.

Verbal nouns.

Sista not' or dum-chyang,
Sista not' or dum-lung,
Sista not' or dum-sing,
} ut supra.

Negatives by máng prefixed.

Imperative present.

Singular.	*Dual.*	*Plural.*
Aff. Sista, nó dum.	Sista {nóche. / dumche.}	Sista {nóne. / dúmne.}

Neg. By prefixed participle thá.

---

* Brackets before the repeated numbers (answering to 3 persons of verb), and the crosses (+), as before explained.

Indicative present.

1. Sista	nógnom. / dúmum.	And so on according to the paradigms phi and dam.
2. Sista	nónum. / dúmi.	
3. Sista	nómi. / dúmi.	

Remark.—This form of the passive has a correspondent active form, sit'vi, nógnom vel dúmum, and both are singularly free from doubt as to the sense, and singularly correspondent with our English idiom, I am killing, I am killed, the phrases being in effect, I am the killer and I am the killed.

But, owing to the inherence of the relative sense in the participles, these forms are eschewed. The following correspondent forms in Khás and Newári are equally available in those languages and equally eschewed for the same reason.

Khás.

Active.	*Passive.*
1. Hánnya húṇ.	Hányako húṇ.
2. Hánnya hós.	Hányako hós.
3. Hánnya hó.	Hányako hó.

Newári.

1. Ji syáhmakhá, or jú.	Syánahmakhá,	kha or júlo.*
2. Chha syáhmakha, or jú.	Syánahmakha,	
3. Wó syáhmakha, or jú.	Syánahmakha,	

Special forms of action between the 2 first persons.

First form, I to thee.

S.	Sit'num.	Kill or killed or will kill thee I only.
D.	Sit'nochhem.	Kill or killed or will kill you two I only.
P.	Sit'nonem.	Kill or killed or will kill you all I only.

Second form, Thou to me.

S.	γSit'gnom.	Killst or wilt kill me thou (or he).	Present and Future.
D.	γSit'gnochhem.	Kill or will kill me ye two (or they two).	
P.	Sit'gnonem.	Kill or will kill me ye all only.	
S.	γSit'sungmi.	Killedst me thou (or he).	Preterite.
D.	γSit'sungchhem.	Killed me ye two (or they two).	
P.	Sit'sungnem.	Killed me ye all only.	

The negative merely prefixes má as in active voice.

The interrogative drops the final m or mi and substitutes ki má, as in active voice.

The potential is conjugated with the passive form of the secondary verb wónto.

Present and future.	*Preterite.*	
1. Sit'wóṇgnom.	1. Sit'wónsúngmi.	and so only conjugating like passive of Háto.
2. Sit'wóṇmi.	2. Sit'wóṇmi	
3. Sit'wóṇtum.	3. Sit'wóṇtum.	

Optative mood precisely as in the active voice, dakgnom, meaning I desire and I am desired, and the passive expression being removed from the truncated main verb.

---

* Kha and jú are substantive verbs in Newári, whereof the former is immutable, and the latter becomes júlo in the preterite.

Precative Mood.

Present.	*Preterite.*	
1. Sit' gno yu.	1. Sissung yu,	} and so on, by dropping final m or mi of the passive and substituting immutable precative particle yu.
2. Sit' yu.	2. Sin yu,	
3. Sit' yu.	3. Sisto yu,	

The subjunctive mood resembles the above, taking only its own signs in lieu of yu, the precative sign.

Causal.

Present.	*Preterite.*	
1. Sit ping gnom.	1. Sit pingsungmi,	} and so all through all the passive forms of the verb pingko, which see.
2. Sit pingmi.	2. Sit pingmi,	
3. Sit pingmi.	3. Sit pingkum,	

According to the above paradigm of sisto, conjugate also pisto to bring,* khisto to rub, khwasto, to feed, phasto, to enable (pha'to), chásto, to hit with stone (chá'to), *kh*wásto (khwâ'to), to tighten, dosto, to sustain for another, (dophto) musto, to seat (muphto), testo, to set at liberty or cause to begin (te*th*o), thesto, to kick (the*th*o), chusto, to finish it (chuphto), chisto, to suspend, isto, to tell, risto, to rot it, josto (jopto), to kindle, chhisto, to relate (chhi'to), wásto, to abandon, yosto, to approve, like, násto, to wet (ná'to), lusto (luphto), to transplant, thos'to (thophto) to take out, tosto (tophto), to reconcile, to unite; lis'to, to teach and to return; pes'to, to reap; lás'to (la*th*to), to take for another, &c. &c. N. B.—The intercalary silibant varies to sh, ph and English th. It is least obscure with the vowel i; most so with the vowels á, ú and ó.

8th.—Conjugation of transitives in po, not having a nasal (n. ng. m) before it.

The verb top', to strike (potius, tó).†

Infinitive Mood.

Aff. To'mung,
Neg. Máng to'mung, } aoristic.

Gerunds.		*Participles.*	
Top'he,	} ut supra.	To'vi,	} ut supra.
Topnung,		Topta,	
Toptopha,		Toptang,	
Topsinghe,			
Topkhen,		*Verbal nouns.*	
		Topchyáng,	
		Toplung,	
		Topsing,	

Negatives of all by prefixed máng.

Imperative.

Singular.	*Dual.*	*Plural.*
To'po.	Topchhe.	Tomne.

---

* Kh of khisto is a very peculiar sound verging upon a vague th, or hard h or Sanscrit ksh: *kh*, is hard Arabic, without the least vagueness.

† The root is properly tó, equal to tá vel dá of Chinese, Newári, Sontal and thá, the same aspirated, of Kuswar. The dubious adherence of the transitive sign, or p, is highly significant.

Dual and plural of object.

To'pochhe. Do thou strike them two.
To'pome. Do thou strike them all.

Negatives.

Thá top'. Thá topchhe. Thá topne.
Thá topchhik. Kill not them two.
Thá top'me. Kill not them all.

Indicative present.

1. To'mi* { +Topchhokmi, excl. / Topchhikmi, incl. } + { To' popmi, excl. / To' pem, incl. }

Dual and plural of object.

{ 1. Tomchhem. / 1. Tomem. } I strike them two. / I strike them all.
2. To'mi. +Topchhikmi. +Topnem.

Dual and plural of object.

{ 2. Topchhikmi. / 2. To'mem. } Thou strik'st them two. / Thou strik'st them all.
3. +To'mi.† +Topchhikmi. +To'mem.

Dual and plural of object.

{ 3. +To'pchhikmi. / 3. +To'mem. } He strikes them two. / He strikes them all.

Preterite.

1. To'pungmi, { +Topchhongmi, excl. / +Topchhingmi, incl. } +{ To'pikongmi, excl. / To'pikengmi, incl. }

Dual and Plural of object.

{ 1. To'pungchhem. / 1. To'pungmem. } I struck them two. / I struck them all.
2. To'pum. +Topchhem. +Tomnem.

Dual and plural of object.

{ 2. To'pochhem. / 2. To'pomem. } Thou struck'st them two. / Thou struck'st them all.
3. +To'pum. +To'pochhem. +To'pomem.

Dual and plural of object.

{ 3. +To'pochhem. / 3. +To'pomem. } He struck them two. / He struck them all.

Negative by prefixed má.

Optative mood by conjugating the verb to desire suffixed to the unchanging form top' of the main verb.

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* It is noticeable very that the verbs in po have no mark of the first person singular of present tense, so generally contradistinguished from the 2nd and 3rd, or all other persons. Even Newari preserves this distinction, dáye, dáyu, (in the past dáyá, dálá, dálá).

† Tomi with the prolonged tone instead of the abrupt one, means he places, whereas to'mi, is he hits. The former comes from táko = place; the latter from to'po = hit.

Interrogative Mood.

Present.	*Preterite.*	
1. Tom' ki má.	To'pung ki má,	} &c. by dropping the mi or m final and substituting ki má.
2. +Top' ki má.	To'po ki má,	
3. +Top' ki má.	+To'po ki má,	

Subjunctive by substituting nam in present and phen in past for the interrogative ki má.

Potential Mood.

Present and Past (Aoristic).

1. Top wontungmi,	} &c. as in Háto and Sishto potentials.
2. Top wontum,	
3. +Top wontum,	

Precative Mood.

Present.	*Past.*	
1. Tom yu.	1. To' pungyu.	} &c. &c.
2. +Top yu.	2. To' poyu.	
3. +Top yu.	3. +To' poyu.	

Continuative Mood.

Present tense.

1. Top ná top nognom,	} *and so on, conjugating the auxiliary verb nó after the manner of phi, in dual and plural.
2. Top ná top nonum,	
3. Top ná top nomi,	

Reciprocal Mood.

Present.

1. Top ná top páṇchungmi,	} and so on, conjugating pánche after the model of imche.
2. Top ná top páṇchem.	
3. Top ná top páṇchem.	

Causal Verb.

As before in all respects. See prior samples.
Cause to strike, top'pingko (see trans. "inkó").

Passive Verb.

Imperative Mood.

Singular.	*Dual.*	*Plural.*
Top sung	Top chhong	To'pi kong
= Hit me.	= Hit us two.	= Hit us all.

---

* Top ná top muschungmi (from musche, to sit) may also be used, = dáya chona of Newári. So also the reciprocal can be expressed by top ná top pángmi or the transitive which moreover is apt to blend in sense with the continuative. So also you can express the habitual present tense by to' vi nognom, literally I am the striker.

Dual and plural of agent.

Top sungchhe. Hit me ye two.
Top sungne. Hit me ye all.

Negatives.

Thá topmo. Thá topchhok. Thá to'pok.
Thá topmochhe. Hit me not ye two.
Thá topmone. Hit me not ye all.

Indicative Mood.

Singular.	*Dual.*	*Plural.*
1. To' mum = hits me (subandi, he).	+Top chhokmi, excl. +Top chhikmi, incl. = hits us two.	+To' popmi, excl. +To' pem, incl. = hits us all.

Dual and plural of agent.

1. To' mochhem. They two (and ye two) hit me.
1. To' momem. They all hit me.
2. +To' mi. +Top chhikmi. +Top nem.

Dual and plural of agent.

2. To' mi. They two (and we two) hit thee.
2. To' mi. They all (and we all) hit thee.
3. +To' mi. +Top chhikmi. +Topmem.

Dual and plural of agent.

3. +Top chhikmi. They two (and ye two) hit him.
3. +Top' mem. They all hit him.

Preterite.

Singular.	*Dual.*	*Plural.*
Topsungmi.	+Top chhongmi, excl. +To'p chhingmi, incl.	+To'pi kong mi, excl. +To'pi keng mi, incl.

Dual and plural of agent.

1. Top sung chhem. They two (or ye two) struck me.
1. Top sung mem. They all struck me.
2. To' mi. +Top chhem. +Tom nem.

N. B.—The brackets and the initial crosses (+) refer, as before explained to forms of the verb scarcely reconcileable with our ideas of conjugation and yet not easily separable from such as are so, *and* to forms common to the active and passive voices, see on for another view of the subject.

Dual and plural of agent.

2. To' mi. They two (or we two) struck thee.
2. To' mi. They all struck thee.
3. +To' pum. +To' pochhem. +To' pomem.

Dual and plural of agent.

3. +To' pochhem. They two struck him.
3. +To' pomem. They all struck him.

A second form of passive is constructed from the past participle and the auxiliar verb, as aforenoticed, thus—

1. Topta nognom,*
2. Topta nonum,
3. Topta nomi,

} &c. according to the model of sheer neuters (see phi).

Special Forms.

I.—I and thou.

S.	Top num,	I (only) strike or will strike or struck thee.	Aoristic.
D.	Topnochhem,	I (only) strike or struck you two.	
P.	Top nonem,	I (only) strike or struck you all.	

II.—Thou and I.

S.γ	Top'mum.	Thou strik'st or wilt strike me.	Present and Future.
D.γ	Top' mochhem.	Ye two strike or will strike me.	
P.	Top' monem.	Ye all strike or will strike me.	
S.γ	Top sungmi.	Thou struckedst me.	Preterite
D.	Top sungchhem.	Ye two struck me.	
P.	Top sungnem.	Ye all struck me.	

The optative passive is precisely similar to the optative active. The negative mood is formed, as before, by merely prefixing the particle of negation, or má.

Interrogative Mood.

Present.	*Preterite.*	
1. To' mo ki má.	Topsung ki má.	Dual and plural by dropping m or mi final and substituting the interrogative form.
2. +Top ki má.	Tom ki má.	
3. +Top ki má.	+To'po ki má.	

Subjunctive mood by substituting nam and phen for ki má, according to tense.

Potential Mood.

Present (or future).	*Preterite.*	
1. Top wongnom.	1. Top wongsungmi,	and so on, conjugating with the passive of wonto like the passive of háto.
2. Top wongmi.	2. Top wongmi,	
3. +Top wongtum.	3. +Top wongtum,	

Precative Mood.

Present.	*Preterite.*	
1. To'mo yu.	1. Top sung yu.	Dual and plural as in the indicative, substituting yu for the final m or mi.
2+Top yu.	2. Tom yu.	
3+Top yu.	3. + To'po yu.	

Causal Verb.

Formed as before with the passive of pingko added to top'. Top pinggnom, &c., Top pingsungmi, &c. Like the above paradigm of roots in 'po are conjugated also, ch'po, to defecate, wo'po, to shoot, i'po, to raise (make get up) du'po, to kindle, khi'po, to make rope, pi'po, to suck, po'po, to lick, yo'po, to take off, chho'po, to sharpen, and all others having no consonant but an abrupt tone (standing for truncated p) before the transitive sign.

9th.—Conjugation of transitives in po having a nasal (m. n. ng) before it.

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* See prior note at Sishto. Here we have for Váyu to'vi nognom and topta nognom, = khas kutnya hon and kutyako hon and dáhma kha, dáya'hma kha, Newári.

The verb hom, to taste.

Infinitive Mood.

Aff. Hommung, to taste or to have tasted.* Aoristic.
Neg. Máng hommung, not to taste or to have tasted.

Gerunds.

Hom he. } Present. Tasting { With main verb in present or future
Hom nung, } { with main verb in preterite.
Hom hom há. Past. Having tasted.
Hom sing he. Future or present. When tasting.
Hom khen. Past. After tasting. After having tasted.

Participles.

Honvi or Homvi. Who tastes, did or will taste. Aoristic.
Homta or Hompta. What is or has been tasted. Past and passive.
Homtáng or Homptáng. What will be tasted, what is usually tasted, what fit to be tasted. Future passive.

Verbal Nouns.

Hom chyáng. Expresses the instrument as homchyáng li, the tasting tongue. It is also used substantively hom chyáng, the taster (organ, not man.)

Hom lung, expresses the locality, external to self.
Hom sing, expresses the time of tasting.
The negative forms of all the above are made by prefixing the privitive particle máng.

Imperative Mood.

Singular.	*Dual.*	*Plural.*
Hompo.	Homchhe.	Homne.
	Dual and plural of object.	
Hompochhe.	Do thou taste those two.	
Hompome.	Do thou taste them all.	
	Negatives of the above.	
Thá hom.	Thá homchhe.	Thá homné.
Thá homchhik.	Do not taste those two.	
Thá homne.	Do not taste them all.	

Indicative Mood.

Present tense.

1. Hom sungmi. { + Hom chhokmi, excl. / Hom chhikmi, incl. } { + Hom popmi, excl. / Hom pem, incl. }

Dual and plural of object.

1. Hom sungchhem. I taste them two.
1. Hom sungmem. I taste them all.
2. + Hom mi. + Hom chhikmi. + Homnem.

Dual and plural of object.

2. Hom chhikmi. Thou tast'st them two.
2. Hom mem. Thou tast'st them all.
3. + Hom mi. + Homchhikmi. + Homnem.

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* Also used quite like an adjective hommung ti, drinking or palatable water, water fit for tasting or being tasted.

Dual and plural of object.

3.+Homchhikmi. He tastes them two.
3.+Hommem. He tastes them all.

Preterite.

1. Hom pungmi	+Hom chhongmi, excl. Hom chhingmi, incl.	+Hompi kongmi, excl. Hompi kengmi, incl.

Dual and plural of object.

1. Hom pungchhem.	I tasted them two.	
1. Hom pungmem.	I tasted them all.	
2. Hom pum.	+Hom chhem.	+Hom nem.

Dual and plural of object.

2. Hom pochhem.	Thou tastedst them two.	
2. Hom pomem.	Thou tastedst them all.	
3.+Hom pum.	+Hom pochhem.	+Hom pomem.

Dual and plural of object.

+Hom pochhem. +Hom pomem.	He tasted them two. He tasted them all.

Negative mood by prefixed má.

Optative mood by conjugation of the verb dák suffixed to the root (hom) of the main verb Hom dák gnom, &c.

Interrogative mood by dropping final mi or m and substituting the interrogation form ki má, thus—

Present.	*Preterite.*
1. Hom sung ki má.	Hom pung ki má.
2.+Hom kimá.	Hom po ki má.
3.+Hom kimá.	+Hom po ki má.

Subjunctive mood by substituting nam in the present and phen in the past for ki má, thus hom sung nam, if I taste; hom pung phen, if I had tasted, &c.

Potential mood by conjugating the aoristic transitive wonto after the root hom.

Precative Mood.

Present.	*Preterite.*	
1. Hom sung yu.	Hom pung yu.	thus merely substituting the precative particle for the interrogative.
2. +Hom yu.	Hom po yu.	
3. +Hom yu.	+Hom po yu.	

Continuative Mood.

Hom na hom nognom,
Hom na hom nonum,
Hom ha hom nomi,
} &c. as before.

Reciprocal Mood.

Hom na hom pánchungmi,
Hom nà hom pánchem,
Hom na hom pánchem,
} &c. as before.

Causal.

By conjugating the root hom with the causal verb pingko, as before.

Passive.

Imperative Mood.

Singular.	*Dual.*	*Plural.*
Aff. Hom sung.	Homchhong.	Hom pi kong.
Neg. Thá hommo.	Thá homchhok.	Thá hom pok.

Dual and plural of agent.

Aff. Hom sungchhe.	Do ye two taste me.
Aff. Hom sungne.	Do ye all taste me.
Neg. Thá hommochhe.	Do ye two taste me not.
Neg. Thá hommone.	Do ye all taste me not.

Indicative Mood.

Singular.	*Dual.*	*Plural.*
1. Hom mum.	+ Hom chhokmi, excl. + Hom chhikmi, incl.	+ Hom popmi, excl. + Hom pem, incl,

Dual and plural of agent.

1. Hom mochhem.	They two (or ye two) taste me.
1. Hom momem.	They all taste me.

Singular.	*Dual.*	*Plural.*
2. + Hommi.	+ Hom chhikmi.	+ Homnem.

Dual and plural of agent.

2. Hommi.	They two (and we two) taste thee.
2. Hommi.	They all (and we two) taste thee.
3. + Hommi.	+ Hom chhikmi. + Hommem.
3. + Hom chhikmi,	They two (and ye) taste him.
3. + Hom mem.	They all taste him.

Preterite.

1. Hom sungmi.	+ Hom chhong mi, excl. + Hom chhing mi, incl.	+ Hompi kongmi, excl. + Hompi kengmi, incl.

Dual and plural of agent.

1. Hom sungchhem.	They two (or ye two) tasted me.
1. Hom sungmem.	They all tasted me.
2. Hommi.	+ Homchhem. + Homnem.

Dual and plural of agent.

2. Hommi.	They two (or we two) tasted thee.
2. Hommi.	They all (or we two) tasted thee.
3. + Hompum.	+ Hom pochhem. + Hom pomem.

Dual and plural of agent.

3. + Hom pochem.	They two tasted him.
3. + Hom pomem.	They all tasted them.

2nd form of the passive.

Hompta nognom,
Hompta nonum,
Hompta nomi, } &c as before throughout the auxiliary verb.

Special Forms.

I.—I and thou.

S.	Homnum.	I (only) taste or will taste or did taste thee	Aoristic.
D.	Hom nochem.	I (only) taste or tasted you two.	
P.	Hom nonem.	I (only) taste or tasted you all.	

II.—Thou and I.

S.γ	Hommum.	Thou (or he) tast'st or wilt taste me.	Present and Future.
D.γ	Hom mochhem.	Ye two (or they two) taste &c. or will taste me.	
P.	Hom monem.	Ye all taste or will taste me.	

Preterite.

S.γ	Hom sungmi.*	Thou (or he) tasted'st me.	Preterite.
D.γ	Hom sungchhem.	Ye two (or they two) tasted me.	
P.	Hom sungnem.	Ye all (only) tasted me.	

Negative Mood.

Is formed, as in active voice, merely by prefixing the privative particle má.

Optative Mood.

Concurs with the same in the active voice, dák having an active and passive sense, and the neuter form dakgnom being also the passive form, dakgnom I desire or am desired; the latter sense transferred to root. With the synonymous verb yot', to like, the voices can be distinguished, yosto being the active transitive and yosung the passive, hence we have as optative active and passive.

Active voice.		*Passive voice.*	
1. Hom yonmi. 2. Hom yotmi. 3. Hom yotmi.	*Present tense.* I like to taste.	1. Hom yotgnom. 2. Hom yonmi. 3. Hom yostum.	*Present tense.* I like to be tasted.
1. Hom yostungmi. 2. Hom yostum. 3. Hom yostum,	*Preterite.*	1. Hom yossungmi. 2. Hom yonmi. 3. Hom yostum.	*Preterite.*

Interrogative Mood.

Simply by dropping m or mi final and substituting ki má.

Subjunctive Mood.

Simply by dropping the mi or m and substituting nam for present and phen for past tense, Hommonam : Homsungphen, &c.

Potential Mood.

By conjugating the passive of wonto, as before, added to the root hom.

Precative Mood.

By dropping the final m or mi, and substituting yu : Hommo yu : Homsung yu, &c.

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* The mark γ placed before some of these forms indicates that they are included in the more ordinary forms of conjugation. They are repeated here for illustration. The change of sense in dual and plural of preterite shows, in conjunction with the whole system of conjugation, how restive the language is under these trammels.

Causal Mood.

As before by pingko added to the root.

Thus are conjugated, námpo, to smell; thampo, to lose; khumpo, to bury; hempo, to cause to sleep; hámpo, to spread; and all similar words. So also are conjugated all transitives in ko having a nasal before them (n or ng) as pingko, to send; chiṇko, to spin and to fill; puṇko, to weave; hóṇko, to uncover; honko, to obey; chhuṇko, to cleanse; túṇko, to drink spirits and to cherish; suṇko, to dry at fire—only that the terminations dependant on the transitive change with that sign, and as hompo makes hompopmi hompem, so pingko makes pingkokmi pingkem.

10th.—Conjugation of transitives in ko not having any consonant between the sign and the root.

The verb Tá, to place.

Infinitive Mood.

Aff. Támung.
Neg. Máng támung. } Aoristic.

Gerunds.		*Participles.*	
Táhe,	ut supra.	Tovi,	ut supra.
Tánung,		Totá,	
Tátáhá,		Totáng,	
Tásinghe,		Verbal nouns.	
Tákhen,		Táchyáng,	ut supra.
		Táiung,	
		Tásing,	

Negatives of all by máng prefixed.

Imperative Mood.

Singular.	*Dual.*	*Plural.*
Aff. Táko.	Táchhe.	Táne.
Neg. Thá to.	Thá tochhe.	Thá tone.

Dual and Plural of Object.

Tákochhe.	Put down those two.
Takome.	Put down them all.

Negative.

Thá tochhik.	Put not down them two.
Thá tome.	Put not down them all.

Indicative Mood.

Singular.	*Dual.*	*Plural.*
1. Tángmi.*	Tá chhokmi, excl. / Tá chhikmi, incl.	Tákokmi. / Tákem.

Dual and Plural of Object.

1. Tángchhem. / 1. Tángmem.	I put down them two. / I put down them all.	
2. +Tomi.	+Tochhikmi.	+Tonem.

* Also Tovi nognom, as elsewhere explained.

Dual and Plural of Object.

2. Tochhikmi.	Thou putst down them two.	
2. Tomem.	Thou putst down them all.	
3.+Tomi.	+Tochhikmi.	+Tomem.

Dual and Plural of Object.

3.+Tochhikmi.	He puts down them two.	
3.+Tomem.	He puts down them all.	

Preterite.

Singular.	*Dual.*	*Plural.*
1. Tákungmi.	Tá chhongmi.	Tákikongmi.
	Tá chhingmi.	Tákikengmi.

Dual and Plural of Object.

1. Tákungchhem.	I placed them two.	
1. Tákungmem.	I placed them all.	
2. Tákum.	Táchhem.	Tánem.

Dual and Plural of Object.

2. Tákochhem.	Thou put'st down them two.	
2. Tákomem.	Thou put'st down them all.	
3.+Tákum.	+Tákochhem.	+Tákomem.

Dual and Plural of Object.

3. Tákochhem.	He put down them two.
+3. Tákomem.	He put down them all.

Negative mood by prefixed má.

Optative mood by dak conjugated after the tá root, as before given.

Interrogative mood by cutting off final mi or m and substituting the querying formula ki má.

Subjunctive mood by like truncation and substitution of nam for present and phen for past tense.

Potential mood by conjugating wonto after the root tá.

Precative by the immutable particle yu substituted for final mi, m.

Causal by conjugating pingko added to root.

Continuative Mood.

1. Tá natá nognom.
2. Tá natá nonum.
3. Tá natá nomi.

} and so on, conjugating the substantive verb nó, to be after the model of phi to come and prefixing the iterated root with na interposed.

Reciprocal Mood.

Singular.	*Dual.*	*Plural.*
1. Tá natá pánchungmi.	Tá natá pánachhokmi.	Tá natá páchikokmi.
	Tá natá pánachhikmi.	Tá natá páchikem.
2. Tá natá pánchem.	Tá natá pánachhikmi.	Tá natá páchinem.
2. Tá natá pánchem.	Tá natá pánachhikmi.	Tá natá páchimem.

And so on for the preterite after the model of imche and all reflex verbs in che. This is formed by the reflex of the verb pá to do, which is páuche added to the iterated root as before. The construction ad sensum, which is the chief rule of this tongue, restricts the reciprocal mood in use to the dual and plural.

Passive Voice.

Imperative Mood.

	Singular.	*Dual.*	*Plural.*
Aff.	Tosung.	Tochhong.	Tokikong.
Neg.	Thá togno.	Thá tochhok.	Thá tokok.

Dual and plural of agent.

Aff.	Tosungchhe.	Do ye two place me.
	Tosungne.	Do ye all place me.
Neg.	Thá tosungchhe.	Place me not, ye two, ye all.
	Thá tosungne.	

Indicative Mood.

Singular.	*Dual.*	*Plural.*
Tognom.	Tochhokmi.	Tokokmi, excl.
	Tochhikmi.	Tokem, incl.

Dual and plural of agent.

1. Tognochhem.	They (or ye) two place me.	
1. Tognomem.	They all place me.	
2. + Tomi.	+ Tochhikmi.	+ Tonem.

Dual and plural of agent.

2. Tomi.	They two (and we) place thee.	
2. Tomi.	They all (and we) place thee.	
3. + Tomi.	+ Tochhikmi.	+ Tomem.

Dual and plural of agent.

+ 3. Tochhikmi.	They two (and ye) place him.
+ 3. Tomem.	They all place him.

Preterite.

1. Tosungmi.	Tochhongmi.	Tokikongmi, excl.
	Tochhingmi.	Tokikengmi, incl.

Dual and plural of agent.

1. Tosungchhem.	They two (or ye) placed me.	
1. Tosungmem.	They all placed me.	
2. Tomi.	Tochhem.	Tonem.

Dual and plural of agent.

2. Tomi.	They two (or we) placed thee.	
2. Tomi.	They all (or we) placed thee.	
3. + Takum.	+ Takochhem.	+ Takomem.

Dual and plural of agent.

3. + Tákochhem.	They two (or ye) placed him.
3. + Takomem.	They all placed him.

2nd form of the passive.

1 Tota nognom,	&c. as before.
2 Tota nonum,	
3 Tota nomi,	

Special forms.

I.—I to thee.

S.	Tonum.	I (only) placed or will place thee.	Aoristic.
D.	Tonochhem.	I (only) placed or will place you two.	
P.	Tononem.	I (only) placed or will place you all.	

II.—Thou to me.

S. γ	Tognom.	Thou (or he) placest &c. me.	Present and Future.
D. γ	Tognochhem.	Ye two (or they two) place me.	
P.	Tognonem.	Ye all (only) place me.	

Preterite.

S. γ	Tosungmi.	Thou (or he) placed me.	Preterite.
D. γ	Tosungchhem.	Ye two (or they two) placed me.	
P.	Tosungnem.	Ye all placed me.	

Negative Mood.

By prefixing má merely.

Optative Mood.

Tá dakgnom, &c. as in active voice.

Tá ping dakgnom (the last as a neuter) seems to be more correct, but is eschewed, though dakgnom, if allowed to be a passive, could hardly (one would suppose) create the passive sense in the main verb in either form of this mood.

Interrogative Mood.

Togno ki má.	Tosung ki má,	and so on, dropping the final m, mi and substituting the interrogative ki má.
To ki má.	To ki má,	
+To ki má.	+Táko ki má,	

Subjunctive Mood.

As in the interrogative but substituting nam in present and phen in past tense for the interrogatory form.

Potential Mood.

Tá won gnom, Tá won mi, +Tá wontum,	&c., like the passive of háto aforegone. Here also the passive sense lost in the truncated root is transferred to the secondary verb. Taping wonchungmi, I am able to be put down, is also admissible.

Causal Mood.

Tá ping chungmi. Tá ping chem. Tá ping chem. I am put down by my own will, &c.	Tá ping gnom, Tá ping mi, Tá ping mi, I am set down by another's will, &c.	&c., by the reflex or passive causal of pingko conjugated like imche and hompo, respectively.

Continuative Mood.

Tá natá pognom, Tá natá pomi, Tá natá pomi.	&c., the iterated root conjugated with the passive of the verb pá, to do, which agrees with tá, to place.

Thus are conjugated jáko, to eat, páko, to make, Tháko, to hear, Náko, to kindle, Chháko, to loosen, Chhuko, to seize, Doko, to catch, Khiko, to hide, Duko, to dig, Seko, to understand, Reko and Guko, to lift up, Khoko, to cook, Boko, to dry and all others having a nude root before the ko sign. But observe

that táko, jáko and páko change their á into ó as in the aforegone paradigm, whereas the rest suffer no such alteration. All alike take a half nasal before the intransitive sign che. It has already been remarked that transitives *in* "ko" having a nasal before the sign, as pingko (potius pingko) to send, are conjugated like transitives in po with a similarly placed nasal. But as pinko is the great former of causatives I give it, before closing the conjugations, observing by the way that the root ping, which is merely nasalized pi, seems to explain the Dravirian causative sign.

Imperative.

	Singular.	*Dual.*	*Plural.*
Aff.	Pingko (Pinko).	Pingchhe.	Pingne.
Neg.	Thá ping.	Thá pingchhe.	Thá pingne.

Dual and plural of object.

Aff.	Pingkochhe.	Do thou send them two.
	Pingkome.	Do thou send them all.
Neg.	Thá pingchhik.	Dual.
	Thá pingme.	Plural.

Indicative present.

Singular.	*Dual.*	*Plural.*
1. Pingsungmi.	+ Pingchhokmi. / Pingchhikmi.	+ Pingkokmi. / Pingkem.

Dual and plural of object.

1. Pingsungchhem.	I send them two.	
1. Pingsungmem.	I send them all.	
2. + Pingmi.	+ Pingchhikmi.	+ Pingnem.

Dual and plural of object.

2. Pingchhikmi.	Thou send'st them two.	
2. Pingmem.	Thou send'st them all.	
3. + Pingmi.	+ Pinchhikmi.	+ Pingmem.

Dual and plural of object.

3. + Pingchhikmi.	He sends them two.	
3. + Pingmem.	He sends them all.	

Preterite.

1. Pingkungmi.	+ Pingchhongmi. / Pingchhingmi.	Pingkikongmi. / + Pingkikengmi.

Dual and plural of object.

1. Pingkungchhem.	I sent them two.	
1. Pingkungmem.	I sent them all.	
2. Pingkum.	+ Pingchhem.	+ Pingnem.

Dual and plural of object.

2. Pingkochhem.	Thou send'est them two.	
2. Pingkomem.	Thou send'est them all.	
3. + Pingkum.	+ Pingkochhem.	+ Pingkomem.

Dual and plural of object.

+ 3. Pingkochhem.	He sent them two.	
+ 3. Pingkomem.	He sent them all.	

Passive Voice.

Imperative Mood.

Aff.	Pinsung.	Pingchhong.	Pingkikong.
Neg.	Thá pinggno.	Thá pingchhok,	Thá pingkok.

Dual and plural of agent.

Aff.	Pingsungchhe.	Do you two send me.
	Pingsungne.	Do you all send me.
Neg.	Thá pingsungchhe.	Thá pingsungne.

Indicative Mood.

Present Tense.

1. Pinggnom.	+ Pingchhokmi. / + Pingchhikmi.	+ Pingkokmi. / + Pingkem.

Dual and plural of agent.

1. Pinggnochhem.	They two send me.	
1. Pinggnomem.	They all send me.	
2. + Pingmi.	+ Pingchhikmi.	+ Pingnem.

Dual and plural of agent.

2. Pingmi.	They two send thee.	
2. Pingmi.	They all send thee.	
3 + Pingmi.	+ Pingchhikmi.	+ Pingmem.

Dual and plural of agent.

+ 3. Pingchhikmi.	They two send him.	
+ 3. Pingmem.	They all send him.	

Preterite.

1. Pingsungmi.	+ Pingchhongmi. / + Pingchhingmi.	+ Pingkikongmi. / + Pingkikengmi.

Dual and plural of agent.

1. Pingsungchhem.	They two sent me.	
1. Pingsungmem.	They all sent me.	
2. Pingmi.	+ Pingchhem.	+ Pinguem.

Dual and plural of agent.

2. Pingmi.	They two sent thee.	
2. Pingmi.	They all sent thee.	
3. + Pingkum.	+ Pingkochhem.	+ Pingkomem.

Dual and plural of agent.

+ 3. Pingkochhem.	They two sent him.	
+ 3. Pingkomem.	They all sent him.	

11.—Conjugation of transitives in "ko" having an abrupt tone (equal iterate sign) between the sign and the root.

The verb Phó, to beget, or give birth to.

Infinitive Mood.

Aff. Phok mung.
Neg. Mang phokmung.

Gerunds.	*Participles.*	*Verbal nouns.*
Phokhe.	Phokvi.	Phokchyáng.
Phoknung, &c.	Phokta, &c.	Phoklang.
		Phoksing, &c.

Imperative Mood.

Aff.	Pho'ko.	Phokchhe.	Phongne.
Neg.	Thá pho'ko.	Thá phokchhe.	Thá phokne.

Dual and plural of object.

Aff.	Pho'kochhe.	Do thou beget two.
	Pho'kome.	Do thou beget all.
Neg.	Thá phokchhik.	Do not beget two.
	Thá phokme.	Do not beget all.

Indicative Mood.

Singular.	*Dual.*	*Plural.*
1. Phongmi.	Phokchhokmi, excl.	Phokkokmi, excl.
	Phokchhikmi, incl.	Phokkem, incl.

Dual and plural of object.

1. Phongchhem.	I beget them two.	
1. Phongmem.	I beget them all.	
2. Phokmi.	Phokchhikmi.	Phoknem.

Dual and plural of object.

2. Phokchhikmi.	Thou begett'st them two.	
2. Phokmem.	Thou begett'st them all.	
3. Phokmi.	Phokchhikmi.	Phokmem.

Dual and plural of object.

3. Phokchhikmi.	He begets them two.	
3. Phokmem.	He begets them all.	

Preterite.

1. Pho'kungmi.	Phokchhongmi, excl.	Phokikongmi, excl.
	Phokchhingmi, incl.	Phokikengmi, incl.

Dual and plural of object.

1. Pho'kungchhem.	I begot two.	
1. Pho'kungmem.	I begot all.	
2. Pho'kum.	Phokchhem.	Phongnem.

Dual and plural of object.

2. Phokochem.	Thou begott'st two.	
2. Phokomem.	Thou begott'st all.	
3. Pho'kum.	Phokochhem.	Phokomem.

Dual and plural of object.

3. Phokochhem.	He begot two.
3. Phokomem.	He begot all.

Reciprocal continuative, &c. compound with phok and the verbs nó and pánche as before.

Passive Voice.

No infinitive or participles save in the causal form phokpingmung, phokpinghe, phokpingvi, &c.

Imperative Mood.

	Singular.	*Dual.*	*Plural.*
Aff.	Phoksung.	Phokchhong.	Pho'kikong.
Neg.	Thá phokgno.	Thá phokchhok.	Thá pho'kok.

Dual and plural of agent.

Aff.	Phoksungchhe.	Do ye two beget me.
	Phoksungne.	Do ye all beget me.
Neg.	Thá phoksungchhe.	
	Thá phoksungne.	

Indicative Mood.

Singular.
1. Phokgnom.
2. Phokmi.
3. Phokmi.

Preterite.
1. Phoksungmi.
2. Phongmi.
3. Phongmi.

Dual and plural and agento-objective as in the last conjugation, only substituting phok for tó, of which the latter shows the tá root, internally modified and the former, the iterate transitive sign, elsewhere suppressed, here brought forward, for phok-gnom and phongmi both depend on pho'-ko being really phok-ko.

Thus are conjugated tá'ko, to decorticate, kho'ko, to crook, pu'ko, to awaken, chi'ko, to bite, ne'ko, to give rest, lu'ko, to choose, li'ko, to lay down or throw down, cha'ko, to put upon, to make come up, ye'ko, to shear or clear the ground for cultivation, chho'ko, to sow, po'ko, to weigh or measure, chu'ko, to plane wood, lo'ko, to turn over, &c. Observe that in all these the latent iterate sign of the imperative whose presence is only indicated by the abrupt tone (ta'ko) is preserved in the conjugation, whence from a common crude, or tá to place and to decorticate, comes all the difference of tángmi, tomi, tomi and tángmi takmi, takmi in the indicative, whilst in the preterite there is only the difference of the abrupt accent, tákungmi, tákum, tákum, and ta'kungmi, ta'kum, ta'kum. The change of vowel is confined to the three verbs tako, jako and pako. All other transitives in "ko" conjugated from the sheer root as Sé-ko, understand it, follow the paradigm of táko, less that change of vowel; as imperative Se-ko, Se-chhe, Se-ne, indicative, séngmi, sémi, sémi, &c. Compare with the transitives in 'ko as above those in 'po, as to'po aforegone. Both follow the Dravirian rule of iteration only disguised for the sake of euphony.

12th.—Conjugation (of Irregulars).

Lá, to go.

Imperative Mood.

	Singular.	*Dual.*	*Plural.*
Aff.	Lá'la.	Lá'chhe.	Láne.
Neg.	Thá lá'la.	Thá lá'chhik*	Thá láne.

Indicative Mood.

	Singular.	*Dual.*	*Plural.*
1.	Lágnom.	Lá'chhokmi. / Lá'chhikmi.	Lá'kokmi. / Lá'kem.
2.	Lá'lam.	Lá'chhikmi.	Lánem.
3.	Lá'lam.	Lá'chhikmi.	Lámem.

* See first conjugation of neuters conjugated from the crude root.

Preterite.

1. Lá'sungmi.	Lá'chhongmi, excl. Lá'chhingmi, incl.	Lá'kikongmi, excl. Lá'kikengmi, incl.
2. Lá'lam.	Lá'chhem.	Lánem.
3. Lá'lam.	Lá'chhem.	Lámem.

13th.—Conjugation (of Irregulars).

Nó, to be.

Present Indicative Singular.

1. Nógnom.
2. Nónum.
3. Nómi or Nóm.

The residue is quite regular (see 1st conjugation) as also in the above verb, and indeed the dual and plural of all verbs whatever are nearly immutable, as will have been seen.

Remark.—Both the above have an abrupt tone or obscure t' before the gerund, participle and verbal noun signs, as lat'he; not'he; lat'lat'ha, not'not'ha; lat'vi, not'vi; la'ta, no'ta, also in the infinitive, lat'mung, not'mung.

14th and 15th.—Conjugations (of Irregulars), being those of the verb lá, to go, as used in combination with other verbs.

I.—With transitives as top', to béat

Indicative present singular.

1. Top lángmi.
2. Top lam.
3. Top lam.

Preterite.

1. Top lasungmi.
2. Top lam.
3. Toplachem.

Dual and plural, as in the uncombined verb lagnom, &c.

II.—With neuters, as im, to sleep.

Indicative present singular.

1. Im lagnom.
2. Im lam.
3. Im lam.

Preterite.

1. Im la sungmi.
2. Im lam.
3. Im lam.

Dual and plural are in the separate verb.

Imperative.

Topla. Imla.

Remark.—In every conjunction of verbs the 1st loses the infinitive sign, and is used in the crude state, whence the peculiar transfer of passive expression to the subordinate verb, as before illustrated. But to this, háto in the sense of let, is an exception, thus, let me strike, is topmung hasung, and topmung hánum, I let thee strike.

The above fifteen conjugations with their accessories (see bracketed portions) exhibit the whole scope of Váyu conjugation. But a reference to them will show that it has been necessary, whilst striving to accommodate our forms to the genius of this language, to interpolate into the transitives certain forms expressive of both agent and object, and likewise to append to the passive certain other forms which have been necessarily set apart from all the conjugations; not to mention the perpetual coincidence of active and passive forms. It may now be of use to exhibit the whole matter of conjugation in another shape seemingly more accommodated to the genius of the language, and which, though exhibiting a deal of repetition, will be found convenient for comparisons when we proceed to the Kiránti language, a language still richer than the Váyu tongue, in pronominal combinations with the verb and wherein consequently many of the mere iterations of the following diagram will take distinct shapes; whence we may infer that decomposition has proceeded a good deal further in the Váyu language than in the Kiránti tongue.

The verb já, to eat.

Imperative Mood.

Singular.

Eat thou.

1. Jánche, self, as agent or object, eat simply.
2. Jáko, It or him.
3. Játo, his or for him.
4. Jákochhe, them two.
5. Játochhe, their two.
6. Jákome, them all.
7. Játome, their all.
8. Jósung, me.
9. Jásung, mine.
10. Jochhung, us two.
11. Jáchhung, our two.
12. Jókikong, us all.
13. Jákikong, our all.

Dual.

Ye two eat.

1. Jánachhe, selves.
2. Jáchhe, it.
3. Jáchhe, his, for him.
4. Jáchhe, them two.
5. Jáchhe, their two.
6. Jáchhe, them all.
7. Jáchhe, their all.
8. Jósungchhe, me.
9. Jásungchhe, mine.
10. Jóchhung, us two.
11. Jáchhung, our two.
12. Jókikong, us all.
13. Jákikong, our all.

Plural.

Ye all eat.

1. Jánchine, selves or simple action (functional).
2. Jáne, it.
3. Jáne, his, or for him.
4. Jáne, them two.
5. Jáne, their two.
6. Jáne, them all.
7. Jáne, their all.
8. Jósungne, me.
9. Jásungne, mine.
10. Jóchhung, us two.
11. Jáchhung, our two.
12. Jókikong, us all.
13. Jákikong, our all.

Indicative Mood.

Present and Future.

Singular.

I eat or will eat.

1. Jánchungmi, self, as agent or object.
2. Jángmi, it, him.
3. Játungmi, his or for him.
4. Jángchhem, them two.
5. Játungchhem, their two.
6. Jángmem, them all.
7. Játungmem, their all.
8. Jónum, thee.
9. Jánum, thine or for thee.
10. Jónochhem, you two.
11. Jánochhem, your two.
12. Jónonem, you all.
13. Jánonem, your all.

Dual.

We two eat or will eat.

1. Jánachokmi, excl. / Jánachhikmi, incl. } selves.
2. Jáchhokmi, excl. / Jáchhikmi, incl. } it.
3. Jáchhokmi-chhikmi, his, for him.
4. Jáchhokmi-chhikmi, them two.
5. Jáchhokmi-chhikmi, their two.
6. Jáchhokmi-chhikmi, them all.
7. Jáchhokmi-chhikmi, their all.
8. Jómi, thee.
9. Jáchhokmi, thine.
10. Jóchhikmi, you two.
11. Jáchhokmi, your two.
12. Jónem, you all.
13. Jánem, your all.

Plural.

We all eat or will eat.

1. Jánchikokmi, excl. / Jánchikem, incl. } selves.
2. Jákokmi, excl. / Jákem, incl. } it.
3. Játikokmi, excl. / Játikem, incl. } his, for him.
4. Jákokmi-kem, them two.
5. Játi-kokmi-kem, their two.
6. Já-kokmi-kem, them all.
7. Játi-kokmi-kem, their all.
8. Jomi or Jokokmi, thee.
9. Jákokmi, thine.
10. Jóchhikmi, you two.
11. Jákokmi, your two.
12. Jónem or Jókokmi, you all.
13. Jánem or Jákokmi, your all.

Singular.

Thou eat'st or wilt eat.

1. Jánchhem, self.
2. Jómi, it.
3. Játum, his, or for him.
4. Jóchhikmi, them two.
5. Játochem, their two.
6. Jómem, them all.
7. Játomem, their all.
8. Jognom, me.
9. Jágnom, mine.
10. Jóchhokmi, us two.
11. Jómi, our two.
12. Jókokmi, us all.
13. Jákokmi, our all.

Dual.

Ye two eat or will eat.

1. Jánachhikmi, selves.
2. Jóchhikmi, it.
3. Jáchhikmi, his.
4. Jóchhikmi, them two.
5. Jáchhikmi, their two.
6. Jóchhikmi, them all.
7. Jáchhikmi, their all.
8. Jógnochhem, me.
9. Jágnochhem, mine.
10. Jóchhokmi, us two.
11. Jáchhokmi, our two.
12. Jókokmi, us all.
13. Jákokmi, our all.

Plural.

Ye all eat or will eat.

1. Jánchinem, selves.
2. Jonem, it.
3. Janem, its, his.
4. Jonem, them two.
5. Janem, their two.
6. Jonem, them all.
7. Janem, their all.
8. Jognonem, me.
9. Jagnonem, mine.
10. Jochhokmi, us two.
11. Jáchhokmi, our two.
12. Jokokmi, us all.
13. Jákokmi, our all.

Singular.

He eats or will eat.

1. Jánchhem, self.
2. Jómi, it.
3. Játum, his, for him.
4. Jochhikmi, them two.
5. Jatochhem, their two.
6. Jomem, them all.
7. Játomem, their all.
8. Jómi, thee.
9. Jómi, thine.
10. Jochhikmi, you two.
11. Jachhikmi, your two.
12. Jonem, you all.
13. Jomi, your all.
14. Jognom, me.
15. Jagnom, mine.
16. Jochhokmi, excl. / Jochhikmi, incl. — us two.
17. Jáchhokmi-chhikmi, our two.
18. Jokokmi-kem, us all.
19. Jákokmi-kem, our all.

Dual.

They two eat or will eat.

1. Jánachhikmi, selves.
2. Jochhikmi, it, him.
3. Jatochhem, his, its.
4. Jochhikmi, them two.
5. Jatochhem, their two.
6. Jochhikmi, them all.
7. Játomem, their all.
8. Jómi, thee.
9. Jómi, thine.
10. Jóchhik, you two.
11. Jochhikmi, your two.
12. Jonem, you all.
13. Jochhikmi, your all.
14. Jognochhem, me.
15. Jagnochhem, mine.
16. Jochhokmi, excl. / Jochhikmi, incl. — us two.
17. Jáchhokmi-chhikmi, our two.
18. Jokokmi-kem, us all.
19. Jakokmi-kem, our all.

Plural.

They all eat or will eat.

1. Jánchimem, selves.
2. Jomem, it.
3. Játomem, his, its, for him.
4. Jómem, them two.
5. Játomem, their two.
6. Jómem, them all.
7. Játomem, their all.
8. Jómi, thee.
9. Jómi, thine.
10. Jóchhikmi, you two.

11. Játomem, your two.
12. Jonem or Jomem, you all.
13. Jánem or Jatomem, your all.
14. Jognomem, me.
15. Jagnomem, mine.
16. Jochhokmi, excl. / Jochhikmi, incl. — us two.
17. Jachhokmi-chhikmi, our two.
18. Jokokmi-kem, us all.
19. Jakokmi-kem, our all.

Preterite Tense.

Singular.

I ate.

1. Jánchhungmi, self, own.
2. Jákungmi, it, him.
3. Játungmi, his, for him.
4. Jákungchhem, them two.
5. Játungchhem, their two, or for them two.
6. Jákungmem, them all.
7. Jatungmem, their all, or for them all.
8. Jónum, thee.
9. Jánum, thine, or for thee.
10. Jónochhem, you two.
11. Jánochhem, your two, or for you two.
12. Jónonem, you all.
13. Jánonem, your all, or for you all.

Dual.

We two ate.

1. Jánachhongmi, excl. / Jánachhingmi, incl. — selves, own.
2. Jáchhongmi, excl. / Jáchhingmi, incl. — it, him.
3. Jáchhongmi, excl. / Jáchingmi, incl. — his, for him.
4. Jáchhongmi, excl. / Jáchhingmi, incl. — them two.
5. Jáchhongmi, excl. / Jáchhingmi, incl. — their two, or for them two.
6. Jáchhongmi, excl. / Jáchhingmi, incl. — them all.
7. Jáchhongmi, excl. / Jáchhingmi, incl. — their all, or for them all.
8. Jómi, thee.
9. Jáchhongmi, thine, for thee.
10. Jóchhem, you two.
11. Jáchhongmi, your two, or for you two.
12. Jónem or Jáchhongmi, you all.
13. Jánum or Jáchhongmi, your all, or for you all.

Plural.

We all ate.

1. Jánchhikongmi, excl. / Jánchhikengmi, incl. — selves, own.
2. Jákikongmi, excl. / Jákikengmi, incl. — it, him.
3. Játikongmi, excl. / Játikengmi, incl. — its, his, for him.
4. Jákikongmi, excl. / Jákikengmi, incl. — them two.
5. Játikongmi, excl. / Játikengmi, incl. — their two, or for them two.
6. Jákikongmi, excl. / Jákikengmi, incl. — them all.
7. Játikongmi, excl. / Játikengmi, incl. — their all, or for them all.
8. Jómi, thee.
9. Jákikongmi, thine, or for thee.
10. Jóchem or Jakikongmi, you two.
11. Játikongmi, your two, for you two.
12. Jónem, or Jákikongmi, you all.
13. Jánem, or Játikongmi, your all, for you all.

Singular.

Thou a'st or didst eat.

1. Jánchhem, self, own.
2. Jákom, it, him.
3. Játum, his, for him.
4. Jákochhem, them two.
5. Játochhem, their two, or for them two.
6. Jákomem, them all.
7. Játomem, their all, or for them all.
8. Jósungmi, me.
9. Jásungmi, mine, for me.
10. Jóchungmi, us two.
11. Jáchungmi, our two, or for us two.
12. Jókikongmi, us all.
13. Jákikongmi, our all, for us all.

Dual.

Ye two ate.

1. Jánáchhem, selves, own.
2. Jáchhem, it, him.
3. Jáchhem, its, his.
4. Jáchhem, them two.
5. Jáchhem, their two, for them two.
6. Jáchhem, them all.
7. Jáchhem, their all, for them all.
8. Jósungchhem, me.
9. Jásungchhem, mine, for me.
10. Jóchhungmi, us two.
11. Jáchhungmi, our two, for us two.
12. Jokikongmi, us all.
13. Jákikongmi, our all, for us all.

Plural.

Ye all ate.

1. Jánchinem, selves, own.
2. Jánem, it, him.
3. Jánem, his, its.
4. Jánem, them two.
5. Jánem, their two, for them two.
6. Jánem, them all.
7. Jánem, their all, for them all.
8. Jósungnem, me.
9. Jásungnem, mine, for me.
10. Jóchhongmi, us two.
11. Jáchhongmi, our two, for us two.
12. Jókikongmi, us all.
13. Jákikongmi, our all, for us all.

Singular.

They ate.

1. Jánchhem, self, own.
2. Jákum, it, him.
3. Játum, his, for him.
4. Jákochhem, them two.
5. Játochhem, their two, for them two.
6. Jákomem, them all.
7. Játomem, their all, for them all.
8. Josungmi, me.
9. Jásungmi, mine, for me.
10. Jóchhongmi, excl. / Jóchhingmi, incl. — us two.
11. Jáchhongmi, excl. / Jáchhingmi, incl. — our two, for us two.
12. Jókikongmi, excl. / Jókikengmi, incl. — us all.
13. Jákikongmi, excl. / Jákikengmi, incl., — our all, for us all.
14. Jómi, thee.
15. Jákum, thine.
16. Jóchhem, you two.
17. Jáchhem, your two, for you two.
18. Jónem, you all.
19. Jánem, your all, for you all.

Dual.

They two ate.

1. Jánachhem, selves, own.
2. Jákochhem, it, him.
3. Játochhem, his, its.
4. Jákochhem, them two.
5. Játochhem, their two, for them two.
6. Jákochhem, them all.
7. Játochhem, their all, for them all.
8. Josungchhem, me.
9. Jásungchhem, mine.
10. Jóchhóngmi, excl. / Jóchhingmi, incl. — us two.

Continued,

Continuation, They two ate.

11. Jáchhongmi, excl. / Jáchhingmi, incl. — our two, for us two.
12. Jókikongmi, excl. / Jókikengmi, incl. — us all.
13. Jákikongmi, excl. / Jákikengmi, incl. — our all, for us all.
14. Jómi, thee.
15. Jákum, / Jákochhem. — thine.
16. Jóchhem, you two.
17. Jáchhem, your two, for you two.
18. Jonem, you all.
19. Jánem, your all, for you all.

Plural.

They all ate.

1. Jánchimem, selves, own.
2. Jákomem, it him.
3. Játomem, his its.
4. Jákomem, them two.
5. Játomem, their two, for them two.
6. Jákomem, them all.
7. Játomem, their all. for them all.
8. Josungmem, me.
9. Jásungmem, mine.
10. Jochhongmi, excl. / Jochhingmi, incl. — us two.
11. Jáchhongmi, excl. / Jáchhingmi, incl. — our two, for us two.
12. Jókikongmi, excl. / Jókikengmi, incl. — us all.
13. Jákikongmi, excl. / Jákikengmi, incl. — our all, for us all.
14. Jómi, thee.
15. Jákum, Jákomem, thine.
16. Jóchhem, you two.
17. Jáchhem, your two, for you two.
18. Jónem, you all.
19. Jánem, your all, for you all.

Remark.—The whole of the above forms will by and by, be seen to exist distinctly in the Báhing dialect of Kiránti, and nearly all in the Bontáwa and Kháling dialects. In Váyu the principle is the same and many of the forms exist; wherefore we must conclude that the others have been lost; or shall we say that the process of development was staid in mid course? The more anomalies, the more instruction, and it is necessary to put so new and peculiar a matter in several lights in order to judge of it truly. So that instead of apologising for the above almost interminable details, I shall proceed to subjoin a comparison of Váyu and Quichna, the latter from Markham ut supra, cit.

	Quichna.	*Váyu.*
	I. I—thee.	
S.	I love thee, Munaiki.	Chhánum.
P.	I love you, Munaikichik.	Chhánochhem, D. / Chhánonem, P.
S.	I loved thee, Munarkaiki.	Chhánum.
P.	I loved you, Munarkikichik.	Chhánochhem, D. / Chhánonem, P.

II. He—thee.

S.	He loves thee, Munásunki.	Chhanmi.
P.	He loves you, Munasunkichik.	{Chhánchhikmi, D. / Chhánem, P.
S.	He loved thee, Munasukanki.	Chhanmi.
P.	He loved you, Munasukankichik.	{Chhánchhem, D. / Chhánem, P.

III. Thou—me.

S.	Thou lovest me, Munahuanki.	Chhángnom.
P.	Thou lovest us, Munahuankichik.	{Chhánchhokmi, D. / Chhánkokmi, P.
S.	Thou loved'st me, Munahuarkanki.	Chhánsungmi.
P.	Thou loved'st us, Munahuarkankichik.	{Chhánchhongmi, D. / Chhánkikongmi, P.

IV. He—me.

S.	He loves me, Munahuanmi.	Chhangnom.
P.	He loves us, Munahuanchik.	{Chhánchhokmi, excl. / Chhánchhikmi, incl.} D. {Chhánkokmi, excl. / Chhánkem, incl.} P.
S.	He loved me, Munahuarka.	Chhánsungmi.
P.	He loved us, {Munahuarkanchik. / Munahuarkaiku.}	{Chhánchhongmi, excl. / Chhánchhingmi, incl.} D. {Chhánkikongmi, excl. / Chhánkikengmi, incl.} P.

Remark.—Chhan to love in Váyu = Muna in Quichna, is not a good word for comparison because of its being of the aoristic class of transitives in "to." In a tensed verb the resemblance to Quichna would have been more apparent. On the other hand, I have given the Váyu dual as well as plural, because its dual formative or chhik is almost identical with the Quichna plural sign or chik, whilst the plural one differs, and nothing is more certain than that these signs are apt to mingle and the dual to fall out of use.

By referring to the above diagram of the verb já, to eat, it will be seen that the Váyu has many other forms expressly representative of the agent and object and therefore more significant than some of those here collated with the Quichna forms.

In Váyu the only forms which in the present state of the language refuse entirely to mix in the stream of conjugation are those which express the action passing from me to thee and no other. One cannot help imagining a system of conjugation with suffixed pronouns thus—

Ha, to give.		Tó, to strike.	
Singular.	*Plural.*	*Singular.*	*Plural.*
1. Hagnom.	{Hákem. / Hágnem.}	1. To'mum.	{To'pem. / To'mem.}
2. Hanum.	Hánem.	2. Topnum.	Topnem.
3. Hatum.	{Hámem. / Hátem.}	3. To'pum.	{To'mem. / To'pem.}

But the following explanations of the senses of the leading series of these forms which is real (the subordinate is wholly hypothetical) will show how utterly such a notion would mislead.

1. Hágnom, gives to me thou or he any single person.
   Hákem, gives to us any one in all numbers.
1. To'mum, beats me thou or he any one in singular number.
   To'pem, beats us any one in all numbers.
2. Hánum, gives to thee I only. Hámi, for any other giver.
   Hánem, gives to you all any save I. Hánonem, for me as the giver.
2. Topnum, beats thee I only. To'mi, for any other beater or beaters.
   Topnem, beat you all, any save I, in all numbers.
3. Hátum, gives to him thou or he or any single person except me. Hátungmi, for me.
   Hámem. No such word.
   Hátomem, gives to them any person or persons except me: Hátungmen, for me.
3. To'pum, struck him any single person but me. Topungmi, for me.
   strikes him, the present tense is to'mi.
   To'mem, strikes them all any person whatever.

Háto, to give, being aoristic hátum, is equally present and preterite. But top, to strike, has for the present tomi, which moreover serves for all 3 persons alike in the singular number.

Thus it appears that num and nem alone offer the appearance of uniformly inflected personal suffixes, and that even in regard to these, the singular and plural *senses* are diametrically opposite.

But there are other complications resulting from the plurality of agents or of patients which account at once for the specialities of the above explanations and of those which follow. Thus—

1. Hágnom, gives to me any single person.
2. Hágnochhem, give to me any two persons.
3. Hágnonem, give to me ye all only.
4. Hágnomem, give to me they all only.

In the preterite hásúng takes the place of hágnóm; and with the verb top', to beat, we have only the euphonic change of gnom to mum, the residue being alike for both verbs; thus we have—

Present.	*Preterite.*
1. To'mum.	1. Topsungmi.
2. To'mochhem.	2. Topsungchhem.
3. To'monem.	3. Topsungnem.
4. To'momem.	4. Topsungmem.

If to the above crowding of agents and patients round the action, we add the fact that the distinction of activity and passivity in the action itself is almost lost at the very corner stone of the whole structure of conjugation—because the sign of action kat' hexokin, viz., its having an object, is precisely that which denotes at once the transitive verb and the passive voice; e. g. há-to, give to him; há-tu-m, he is given and he gives—we shall at the same time perceive how difficult it is to make these languages conform to our notions of conjugation (see and compare Tickell and Philipps, voce Sontal) and shall also be prepared to hear that a system at once so complex and so incomplete has been very generally cast aside either wholly (Newári, Lepcha, Bodpa, Malayalim, Burmah, Malay); or in part (other Dravirian, Dhimáli, Namsangnaga, &c.); and in this or that particular mode, one group of tongues rejecting the dual (Dravirian cultivated); another, the sex signs (Himálayan complex);* a third, the whole system of conjunct pro-

* The complex Himalayan tongues are Limbu, Kiránti, Háyu, Kúswár, Súnwar, Dhimáli, Bhrámu, Chepáng, Kusunda, &c.

nouns (Himálayan simple* and those above cited); whilst the attempt to blend with the action, agents as well as patients and both in the dual and plural numbers, has been maintained only by Kiránti and some oceanic tongues, the Váyu, Sontal, &c., being now restricted to a duality and plurality on one side only, viz. that of the agents or that of the objects. The Váyu can express (like the Sontal) several agents and one patient; or several patients and one agent; but not a plurality of both. The Kiránti can express a plurality of both. But neither one nor the other has effected the same sort and degree of amalgamation of its conjunct pronouns in the case of its nouns as well as verbs, as the Himálayan Kuswár and the Ugro-finnic tongues generally have done, which all alike have perfectly blended suffixes for both; whilst the Kiránti with an equal fusion in both cases prefers the method of prefix for the nouns,† and the Váyu, following the same Dravirian order of arrangement has not reached the same completeness of development in *this* respect (therein further agreeing with Dravirian) though more in others. It has a perfectly separate set of possessives for combination (áng, úng, á vel ú); but to the noun has got blended inseparably the 3rd of these (ang-upa, ung-upa, a-upa or wathim u-pa) and thus a euphonic combination of the whole with the nominal root has been prevented, as in Bodo which, however, as well as Váyu, can and occasionally does, use as perfectly fused‡ prefix forms as the Kiránti, and sometimes both the disjunct and conjunct prefixually, and Dhimáli likewise.§ From the verb Bodo like Malayalim and several Nilgiri tongues, has dropt the pronoun: Dimáli, like Tamil, Uraon and Male, has kept it: in Váyu, as in Sontal and Hó, the phænomena are complex.

I refer to the head of pronoun for some more remarks on this subject. In the meanwhile and in conclusion of the topic of Váyu conjugation I beg to suggest attention to the following collation of actives and passives of the several types, in the 3rd persons of the present (or future) and preterite.

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* The simple or nonpronominalized are Newári, Múrmi, Gúrung, Mágár, Khas (mixed), Lep'cha, Pálusen or Syár'pa (Serpa), Bodo, &c.

	Compare Sontal		and Kuswar.	
Wherewith	apu-ing	dal-eng aïng.	Baba-im.	Thatha-im-ik-an.
	apa-m	dal-me-am.	Baba-ir.	Thatha-ir-ik-an.
	apa-t	dal-e aï.	Baba-ik.	Thatha-ik-an.

† á-pa, my / í-po, thy / á-po, his } father. | tib-ú, I / tib-í, thou / tib-á, he } strike.

‡

Bodo.	Váyu.	Dhimáli.	Its verb.
a-pha.	am-pa.	ka-pa.	Dengkhi-ka.
na-pha.	um-pa.	na-pa.	Dengkhi-na.
bi-pha.	a-pa.	wa-pa.	Dengkhi.

§ The full pronominal forms with the noun are—

angni apha.	ang upa.	kang apa	kang ka-pa.	Which last quite agrees with Kuki.
nangmi apha.	ung upa.	nang apa	nang na-pa.	
bini-apha or nangni napha.	wathim upa.	oko apa	eko wa-pa.	
bini bipha.				

Collation of Voices in Singular Number.

Transitives in "to." Yemto, to burn.

		Present tense.			*Preterite tense.*		
I.	Active	1. Yemtungmi.	2. Yemtum.	3. Yemtum.	1. Yemtungmi.	2. Yemtum.	3. Yemtum.
	Passive	1. Yemum.	2 Yémi.	3. Yemtum.	1. Yemsungmi.	2. Yémi.	3. Yemtum.
		Transitives in "to" preceded by sibilant, Sishto, to kill.					
II.	Active	1. Sinmi.	2. Sitmi.	3. Sitmi.	1. Sishtungmi.	2. Sishtum.	3. Sishtum.
	Passive	1. Sitgnom.	2. Sitmi.	3. Sitmi.	1. Sissungmi.	2. Simmi.	3. Sishtum.
		Transitives in "po," Wopo, to shoot.					
III.	Active	1. Wo'mi.	2. Wo'mi.	3. Wo'mi.	1. Wo'pungmi.	2. Wo'pum.	3. Wo'pum.
	Passive	1. Wo'mum.	2. Wo'mi.	3. Wo'mi.	1. Wo'psungmi.	2. Wo'mi.	3. Wo'pum.
		Transitives in "po" preceded by a nasal. Hómpo, to taste.					
IV.	Active	1. Homsunmi.	2. Hómi. / Honmi.	3. Hómi. / Hómmi.	1. Hompungmi.	2. Hómpum.	3. Hómpum.
	Passive	1. Honmum.	2. Honmi.	3. Hónmi.	1. Homsungmi.	2. Hónmi.	3. Hómpum.
		Transitives in "ko," Pako, to do.					
V.	Active	1. Pángmi.	2. Pómi.	3. Pòmi.	1. Pákungmi.	2. Pákum.	3. Pákum.
	Passive	1. Pógnom.	2. Pómi.	3. Pòmi.	1. Pósungmi.	2. Pómi.	3. Pákum.
		Transitives in "ko" preceded by a nasal. Pingko, to send.					
VI.	Active	1. Pingsungmi.	2. Pingmi.	3. Pingmi.	1. Pingkungmi.	2. Pingkum.	3. Pingkum.
	Passive	1. Pinggnom.	2. Pingmi.	3. Pingmi.	1. Pingsungmi.	2. Pingmi.	3. Pingkum.

Infinitives and Participles of the above.

I.	Active	Yémung (yem'mung).	Yénvi.	Yemta.	Yemtang.
	Passive	Yempingpung.	Yempingvi.	Yempingta.	Yempingtang.
II.	Active	Sitmung.	Sitvi.	Sishta.	Sishtang.
	Passive	Sitpingmung.	Sitpingvi.	Sitpingta.	Sitpingtung.
III.	Active	Wo'mung (Wopmung).	Wo'vi.	Wopta.	Woptang.
	Passive	Woppingmung.	Woppingvi.	Woppingta.	Woppingtang.
IV.	Active	Hómung (Hommung).	Hónvi.	Hómta.	Hómtang.
	Passive	Hómpingmung.	Hómpingvi.	Hómpingta.	Hómpingtang.
V.	Active	Pámung.	Póvi.	Pótá.	Pátáng.
	Passive	Pápingmung.	Pápingvi.	Pápingtá.	Pápingtáng.
VI.	Active	Pingmung.	Pingvi.	Pingta.	Pingtang.
	Passive	Pingpingmung.	Pingpingvi.	Pingpingta.	Pingpingtáng.

A Specimen of the Va'yu Language.

Ang ming Páchya nom. Ang thoko Váyu nomi (or Gó Váyu gnom) Khásakhata Háyu itkem. Ungki dávo be Váyu ischikem. Go jekta dumsungmi. Hátha bong dumsungmi ghá má sengmi. Lé got kulup chhuyung* wanikhen. Dhankuta mu khakchhing puchhum chupvikhata póguha háta vik páchikokmi. Ang kó má nom. Ang távo Gajraj Thápa nung nomi. Gonha kóphe nakphe inang munang wathi yengkum. Wathim nárung gonha blektum. Wathim chho le pókum. Honko á thum rámi. Captánha thúm hánung hónpingkum. Ang dávo lit'nung blining chólo chupsit khen inhe gó gonha mutpingkum. Dávo chinggnak chamchem. Gon sénche. Ungjitá dávo ghá chitnum. Ang thumbe ithaji nómi gonha wálige latpinggnom. Angki thóko kósi blingmu homba imba muschikokmi (our tribe, *we*). Népál kháral khen Támbakósi bong muschikokmi. Gókháta Awal be mutvi máng nokokmi. Kúswár, Bótia, Dénwár, Awal be mutvi nomem. Awal mu ramsa ha gáng khéva má muschikokmi. Vik máng póvi, ghádimu chokphi sétung jóvi, kem má póvi thóko Kusúnda, Chépáng báhamu chháju puchhibe má muschikokmi. Angkimu kem nomi, vik le nomi ; págnamu vik nom, memha, makai, dósi, pháphár, bója, lévi, rówa, másа, sákha, góhúṇ, láru livi vik nom. Angki múlung kólube, Héngongwo báha. Lapcha, Limbu báha máng jáhe, chháju mádúmbe gadhá páhe, muschikokmi. Chháju púchhibe bója má lichem, jomsitmu ming mische le má nom. Hánung bong jomsit lichem minung bong lat'lat'ha muschikokmi. Ghákhata ha ruklung be rukkokmi, duklung be dukkokmi. Phalámtú'vi, singchuk'vi, kóchónvi angki thok be má nómem. Kampáchyáng, bingchopáchyáng gyétim gót khen ingchikokmi. Angki kem angki gót há páchikokmi. Angki wáschyáng angki vik sétang rówa khen rómekhatá há dúri chinchingha jéwa púngmem. Váyukhata khakchhingpuchhum póvi (or chupvi) má nómem. Mische pá gyéti namsangmu séva má pómem. Jéwa Héngongwo gót khen rangai pómem. Lónchokhata dáwángmi jéwa wáschimem. Meschokhata rangai póta wáschimem Angki mulung ithijila nomi. Náyung gót kulupha bákulup khen chholup* (or lé gót kulup) bong múphta chháju mádúmbe itha dókha hamta nómem

* Phrases of numeration. See Vocabulary.

(or hamchimem). Angki kem chhálung singha póta, diha wamta, húnglúng kóha róta, khistiha supta, gége gége páchimem. Kem bhitari náyung kuna nochhikmi; kólu, imlung; kólu khó'lung. Táwokhata, támikháta gégé tá má hokmi. Bangchodum khen biak pachikokmi. Náyung got kulup ha bá kulup khen lé gót kulup* bong pénku háhá ha rome ingchikokmi. Pénku phen mang wontike nam rome upu kembe lat'lat'ha, kam pápáha, phengkokmi. Mische má pápáha me'ta singtong kóbe *kh*umpopmi. Khócho, puk, chéli, béli, méchho, jachikokmi, Gai, bhálu, phóka, má jákokmi. Singwokhúdu, dúdu, chálung, jákokmi. Sóve tungchikokmi, bukchhale tungkokmi (note the 2 forms of the verb). Sóve, angki póta, chinggnak tungkokmi. Bukchha, gyétim gót khen ingta, yanggnak tungchikokmi. Angki chhobe má blekchikokmi. Nokchhung saschikokmi, mescho le, lóncho le. Bálung khen gyéti suna le má dakkokmi. Angki chólvi Bálung. Gyéti suna le má nom. Váyu thoko mu singtong sunaha Brahman Lama má honmi (or honmem, indefinite). Gyétim lom má khokchikokmi. Angki vik hákhele má watkokmi. Upo met'khen táwokhata ha chhinggnak yanggnak má pápáha lingmem. Támikhata ha mische le má lingmem. Imhamu dáwo dévi angki májhua nomi. Inung wanikhen póvi suná le má nom. Angki thóko gyétim gót be lásta, yangta thóko, náti tolgong† bong yangmi. Finis.

TRANSLATION.

My name is Páte. I am a Váyu. The Khas tribe call us Háyu, but our own name is Váyu. I am an old man. I don't know how old, above sixty. I am a cultivator of land assigned by the Rája to the soldiers of the Dhunkuta regiment. I have no land of my own. My son is in the service of Captain Gajráj Thápa. You saw him here often and drew his portrait and measured him. He thought that very queer and was a little alarmed. But the Captain reassured him and he consented. I have been here four months to help you to learn our language. It is very difficult. You must judge of all. I can only answer your questions. I hope you will soon let me go home. Our people dwell in the basin of (or along the course of)

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* A phrase of numeration. See Vocabulary.

† A phrase of measure. See Vocabulary. It is equal two handfuls.

the Kósi river from near the valley of Nepál proper to the Tamba Kósi. We are not Áwalias (people inured to malaria or áwal). The Áwalias dwell in the valley of the river, and are called Kuswar, Bótia, Dénwar, &c. We can't live there by reason of the malaria. Nor do we dwell on the hill summits like the Kúsúnda and Chépáng, who never cultivate, but live on wild herbs and fruits and never build houses. We have houses and cultivate the soil, growing maize and kódo and buckwheat, and rice, cotton, millets, barley, wheat and madder. We are fixed cultivators, like the Néwárs, not migratory ones like the Lepchas, Limbus and others. We occupy the central parts of the hill slopes, which we cut into terraces. Rice won't grow on the tops nor any sort of grain. We go up as high as grain will grow. We use the plough or the spade, according to the nature of the site we occupy. We have no craftsmen, smiths, carpenters or potters—of our own tribe. We buy utensils and ornaments from others. We build our own houses and our women spin and weave the home-grown cotton, of which they make our clothes. None of our race are soldiers, nor do we ever take service (menial). The Néwárs dye for us, if we need it; but the men wear plain clothes. Those of the women are sometimes dyed. Our villages are very small, usually fifteen to twenty houses scattered along the hill sides. Our houses are built of rough timber, plastered and thatched with grass. Two rooms in a house—one for cooking and the other for sleeping. We have no general dormitory for all the grown girls, or boys of the village. We marry at maturity, buying our wives. A wife costs fifteen or twenty rupees. If we have no money we earn her by labour in her father's house. We bury our dead without any ceremonies. We do not tattoo our bodies. Our ears we bore occasionally. We have no priest but the exorcist, who is also our only physician. None of our tribe follow the bráhmans or lamas. We abide by our own creed and customs. We eat fowls, pigs, goats, sheep, buffaloes. Not oxen, bears or monkeys, but honey, milk, eggs. We drink beer and spirits. Much of the former, as it is home-made; little of the latter, because we must buy it. Our law of inheritance gives equal shares to all the boys, and no share to the girls. Our head villager decides our disputes. We never appeal from him. Our tribe is a broken one and is reduced to very inconsiderable numbers.

Báhing Vocabulary.

Nouns Substantive.

Air (wind), Jú.
Affection, Dwakcho.
Abuse, Waita. Khicho.
Abode, Bwagdikha.
Adulterer, Ryamnipo.
Adulteress, Ryamnimo.
Agriculturist, Byangsikokba.
Amaranth (grain), gósuráni.
Aqueduct, Kúlo. Pwáiám.
Ancle, { Khóli míchi. / leg joint.
Arm-all, } Gú.
Arm, fore, }
Article, thing, Grókso.
Aunt-pat. } Momo.
Aunt-mat. }
Anger, Sókso.
Ant, Gágáchingmo.
Anus, Dyála.
Arrow, Blá.
Ax, Khá.
Alder tree, Búrsi.
Bag, Sálamá
Basket, Bainso.
Barley, No name. Jou is used.
Bamboo, Pálám (all). Rikcho (small).
Bark of tree, Singkokte.
Back, Ching.
Back bone, Chinreúsyé.
Belly, Kója.
Beast, quadruped, { Lékhólithiba. / Lékhólimigwákba.
Being, animal, Samthíba.
Box, chest, No word.
Bat kind, Pákati.
Bat { male, Ápo pákati. / female, Ámo pákati. / young, Pákati átámi.
Birth. No name.
Bird kind, Chikba.
Bird { male, Ápo chikba. / female, Ámo chikba. / young, Chikbaatámi.
Beer, Gnási.
Bread, Shéblem.
Birch tree, Phyékulima.
Bed, Bló'cho.
Bed chamber, Ipdikha.
Bed time, Ipcho béla.
Bee, Syúra (wasp, Yúkuwá)
Blacksmith, Teupteu'le.
Blood, Húsi.
Buttocks, Kósidyála.
Battle, fight, Mócho.
Boat, Dúnga.
Bear, Wam.
Beard, Shéö sóng, mouth hair or Yóli swón.* chin hair.
Boar, Ápo po.
Body, Ram.
Burden, load, Kúra.
Bone, Reusye.
Breast, Kúchu.
Breastnipple, Neucheu.
Bow, Li. [nima, f.
Bowman, Lícha, m. Límicha, or Líchа-
Bottom, lowest part, Háyu.
Boy, Táwa.
Buffalo kind, Mésyeú.
Buffalo { male, Ápo mésyeu. / female, Ámo mésyeu. / young, Mésyeu átámi.
Bull, Bing.
Boundary, Rélu.
Breath, Sam.
Branch of tree. No word.
Brother { Lo'ba, younger. / Yáwa, elder.
Brotherhood / Brethren { Lo'babum.
Brother in-law, Cháïwa. Wadyalcha.
Calf { male, Ápo gai átámi. / female. Ámo gai átámi.
Can, cup, { Pú. Dácho. / Grokso (thing). / Pwákutúcho grokso (water to drink vessel).
Cart, No word.
Cat kind, Birma.
Cat { male, Apo birma. / female, Ámo birma. / young, Birma átámi.
Carpenter, Sing chokba.
Cheek, Chocho.
Chesnut tree, Syéli.
Chin, Yéoli. Yoli.
Childkind, Tá. Gikba. Táwa. Támitáwa.
Child { male, Táwa. / female, Támi.
Children, Tádau. Táwatámi.

* Sóng vel Swón vel Swóm. The broad ó passes into wá and the final nasal is vague.

Clay, Phélemkhápi.
Cloth, Wá'.
Cotton cloth, Linkhi wá.
Woollen cloth, Unke wá.
Silken cloth, No word.
Clothes, raiment, Wá.
Cloud, Kuksyal.
Colour, Moba.
Cold (frigor), { Junamti (weather). Jú (wind).
Companion, Wárcha.
Claw, nail, talon, Gyáng.
Cane (calamus), Gúri.
Cousin { Pat. Mat. } Gnwápsya.
Cow, Gai, H. Ámo bing.
Cough, Sheúkhé.
Copper, No name.
Cowherd, Gai theulba.
Cotton, uncleaned, Linkhi.
Cotton, cleaned, Rúwa.
Courage, No word.
Crow, Gagákpa.
Daughter, Támi (girl).
Daughter-in-law, Dyalmi.
Dance, Síli.
Day, Namti.
To-day, Ána.
Dust, Dyerbakhápi (flying earth).
Darkness, Namring.
Desire, wish, Dwakcho.
Ditch, No name.
Deer, Kísi.
Deer { male, Ápo kísi. female, Ámo kísi. young, Kísi átámi.
Door, Lapcho.
Disease, illness, No name.
Dispute, *Mocho? Khícho? Infinitives.
Dog kind, Khlicha.†
Dog { male, Ápo khlícha. female, Ámo khlícha. young, Khlíchá átámi.
Death, No name.
Dream, Gná'mo.
Drink, Tu'mé. Tuchome.
Drunkard, Dukba. Túba.
Dyer, Ryákba.
Earth—the
Earth—a little { Khápi.
Ear, Sámaneu (see nose).
Egg, Dí. Bádí (Bá = fowl).
Elephant, No name.
Echo, Thololamstikha.
Enemy, No name.
Ewe, Ámo bhéra.
Eye, Michi.
Eyebrow, Kur'mi swon'g.
Eyelash, Míchi swon'g.
Elbow, Nyaksi.
Exorcist, Jamcha.
Earthquake, Khrínyam.
Evening, Namtheuba.
Face, Kúli.
Feather, Chikbaswong (= bird-hair‡
Feast, Festival, { Khoúmá.
Father, Ápo.
Father-in-law, Yeppa.
My father, Ápa.
Thy father, Ípo.
His, her, its father, Ápo.
Fever, Júsara (ague).
Fair, Market, { Jyapdikha, Lédi'kha = buying and selling place.
Fear, Níma. Guíma.
Ferry, Hamba glúdikha.
Fire, Mí.
Fire-place, Mímudíkha. Bwakal.
Field, arable, Rú. Byángsi.
Finger, Brepcho.
Finger-nail, Gyáng. Brepchogyáng.
Fellow countryman, { Dwábo dyelkem. Dwábo dyel dimmuryu.
Fellow tribeman, { Dwábo thokkem. Ádwábo thokkem.
Fish. Gná.
Flavour, taste, Bró.
Flesh, Syé.
Flint, Chichilung.
Flour, Phúl.
Flea, Chukbe.
Fence, Khor.
Floor, Khápi (earth).
Flower, Phúng.
Ford, Pwáku hambag ludikha. §
Fly, Sheúmo.
Food, Jáwáme. Jáchome. Participles.‖
Fowl kind, Bá.
Fowl { male, Swáreúwabá. female, Chwongkameubá. young, Bukballo.

* Khícho, verbal, mocho practical, dispute.
† Khicha is Newári. The insertion of a labial is a common trick of these ongues. See note on Háyu verbs. ‡ Quill is Básyurima.
§ Literally, water (of) far side issuing place.
‖ Jáwáme, what he eats. Jáchome, what any one eats, an edible substance.

Fowl wild, Sábala bá.
Fowl's egg, Bá dí. [dyelke.
Foreigner, Wángmedyeldim. Wángme-
Fist, No word.
Forehead, Kúpi.
Filth, dirt, Ríku.
Foot, Kholi blem.
Form, Moba.
Forest, jungle, Sábala.
Fruit, Sichi.
Frost, Phúrsa.
Frog, Krúkrú.
Friend, No name.
Garlic, No name.
Ginger, Peúrim.
Girl, Támi.
Glue, cement, Kyapcho.
Glutton, { Kojacha, m. / Kojachanima. f.*
Grandfather, Kíkí.
Grandmother, Pípí.
Grandson, Chácha.
Granddaughter, Cháchánima.
God, A god, no name.
Gold, Syeúna.
Goat kind, Swongára, Sóngara.
Goat { male, Ápo swongára. / female, Ámo swongára. / young, Swongára átámi,
Goat herd. Swongára theulba.
Grass, Jim.
Grain, Jámá.
Ghee, Butter, Gyáwa. (oil.)
Groin, Téchi.
Hand, Gúblem.
Handle, Rísing.
Spade handle, Rúkokchom rísing.
Hair, Swóng.
Hair of head, Cham.
Hair of body, Swóng.
Herdsman, Bing.—Mésyeu-theulba.
Heaven, Dwámu, (sky.)
Head, Píya.
Heart, Thim. Theum.
Heat, Haúlo. Haúnám.
Heel, Cheuncheu leú.
Hail, Músi.
Hammer, Thyakchome.
Hammerer, Thyakba.
Hemp, Grá.
Hen, Ámo bá.

Hip, Khólimichi.—or Jilamíchi.
Hope, No word.
Hoof, { whole / cloven } Gyakseuleú
Hog kind. Pó.
Hog { male, Ápo pó. / female, Ámo pó. / young, Pó átámi.
Hole, Gwályum.
Hoe spade, Kokchóme.
Husk, Phíra.
Hook peg, Cháchóme.
Horn, Grong. [horn).
Goat's horn, Swongára ágrong (goat its
Honey, Syúra. Shúra.
Horse kind, Ghóra.
Horse { male, Ápo ghóra. / female, Ámo ghóra. / young, Ghóra átámi.
House, Khyim.
Householder, { Khyimcha, m. / Khyimchanima, f.
Home, Bwágdíkha.
Hunger, Sóli.
Husband, Wancha.
My husband, Wá wancha.
Thy husband, Í wancha.
Her husband, Á wancha.†
Instrument, } Rúpachó.
Implement, } Grokso.
Infant, { Bébacha, m. / Bébachaníma, f.
Ice, No name.
Intestines, Chisye.
Iron, Syál, syal.
Jaw, Ka'kám.
Joint, Míchi.
Juice, Pwa'ku (water).
Knife, { Be'tho. / Chwarchom.
Knee, Pokchi.
Knot, Khingna. (p. p.)
Kitchen, Kidikha.
King, Ho'po. Hwáng.
Lamp, torch, To'si.
Language, speech, Ló.
Lip, Shéo-kokte (mouth leather).
Leaf, Swápho.
Tree's leaf, Sing swápho.
Leather, Kokte (skin).
Leg-all, Kho'li.

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* Kojachanima a female glutton. So khyimchanima a house wife. See householder: and so also of all formatives in cha, Koja = belly. Khyim = house.

† Wá. Í, Á, are the pronominal prefixes of nouns and suffixes of verbs, a thoroughly Dravirian trait and a fundamental. Here is a sample of the suffixes ú the first person = ur, wa or o.

{ Jyul—ú I / Jyul—í Thou / Jyui—á He. } put or place.

Leg-true (tibia,) Phóphól.
Liar, Limochalba.
Light (lux,) Haúhaú.
Lightning, Ploksa.
Life, Sam, (breath).
Liver. Ding.
Louse, Túsyar.
Lungs, Syeúporeú.
Loom, { Wápachogrokso. / Toblosing.
Load, Kúra.
Lowlander, { Dheptecha, m. / Dheptechanima, f.
Mat, Thárkimo blócho.
Maize, Greleuwámo.
Master, Ho'po. Hwáng.
Mark, Syancho.
Market, Jyapdikhalédíkha.
Mason, Khyimpába.
Mankind, Múryeu.
Man { male, Wainsa. / female, Mincha. / young, Átami. Muryeu ata.*
Maker, doer, Paba. Pabba.
Madder. Deu.
Mare, Ámo ghora.
Marriage, Grochyer.
Mill, hand or water, Khuruwa.
Millet (kangani), Básara.
Millet (kodo), Chárjá.
Millet (juwár), Binkhumá.
Millet (sáma), Sáma.
Milk, Neucheu.
Mist, Kuksyal.
Manner, Mode, way, } Khó.
Monkey (all). Moreu.
Measure, the instrument, Khapcho.
Medicine, No name.
Mind, Theum.
Moon, Taúsaba. Lá.
Month, Lá.
Morning, Didila.
Music, Tapcho.
Mother, Ámó.
My mother, Áma.
Thy mother, Ímo.
His, her, its mother, Ámo.
Money (copper). Lálajima.
Mountain, Syerte.
Mountaineer, { Syértecha, m. / Syértechanima, f.
Mountain products, Syértedim.
Mouth, Sheö.
Moustache, Sheöswón.
Muschito, Syúpyél.
Mouse, Yeu.
Nipple, Neúcheú (milk).
Noise, Syanda.
Neck, Sheureu (French eu).
Name, Ning.
Night, Téugnáchi.
Net, No name.
Needle, Léumje.
Noon (day), Nam-helscho.
Nose, Néu (French eu).
Neighbour, Kwaudaubwakba.
Nostril, Neu'lam (nose—way).
Navel, Sheupum.
Oar, No name.
Oil, Gyáwa.
Oak-tree, Sóbusársi.
Odour, smell, Árí. Rí.
Onion, No name.
Ox kind, Bing.
Ox { male, Bing. / female, Gai. Ámo bing. / young, Gai átámi. Bing átámi.
Ordure, Khli. [ákhli.
Man's ordure, Muryukhlí or Muryu-
Tiger's ordure, { Gupsa khli or Gupsa ákhli.
Pain, Deúkha, H.
Palm of hand, Gublem ágwalla.
Penis, Blí. [chiefly).†
Place, Díkha (in composition of verbs
Plant, Wába, P.
Pleasure, Gyérsi.
Plough, Jóchome.
Ploughman, Jóba, P.
Plain, Dyamba.
Plainsman, Lowlander, } Dyambácha, m. / Dyambachanima, f.
Plate dish, Platter, } Pú.
Parent, Kíkba, p. ‡
Plantain, Grámochi.
Plantain tree, Grámochi sing.
Plantain fruit, Grámochi sichi.
Pine (tree), Tósi.
Pepper (black), No name.
Palate, Kókolyam,
Pepper (red), Dukba.
Potter, Khápi yalba.
Peach, Khwómalchi.
Peach tree, Khwomalchi sing.

* Wainsa and Mincha are used substantivally and adjectively. Not Átámi. Man's child or human child is Muryuatami = man his child. Better átá or átáwo: See child. Tami is used for the young of all animals.

† e. g. Ip dikha sleeping-place = bed chamber: Kídikha cooking-place = kitchen. ‡ To this answers Gikba = child; or who begets and who is born.

Peach fruit, Khwomalchi sichi.
Price, Thing.
Priest, Nokso.
Poison Ning.
Ram, Apo bhéra.
Rat, Yéu (French eu).
Rain, Ryá-wá.
Rains, the, Ryáwa namti.
Rib, Chakh yamreusye.
Rice, unhusked, Búra.
Rice, husked, Shéri.
Rice, boiled, Mómara.
River any, Gúlo.
Root, Syángri.
Rust, Gári.
Rudder, No word.
Road, Lam.
Rope, Grá.
Roof, Khyimpú.
Rhododendron, Twaksyel.
R. —— tree, Twoksyel sing.
R. —— flower. Twoksyel phung.
R. —— fruit, Twoksyel sichi.
Salt, Yuksi.
Silence, Licho.
Spade, spud, hoe, Rúkókchome (=ground-digger).
Spear, Hóchóme.
Shape, form (and colour), Móba.
Sheep kind, No name. Bhéra used.
Spirits (distilled), Héna.
Spindle, Ránta.
Spinner, Panba.
Skin, Kokte.
Scull, Piya réusye.
Shoe, sandal, Khólidi paschong.
Seed, Wáchyár.
Seive, Ríyangma.
Sleep, Ip'thi.
Sail of boat, No word.
Sand, No word.
Spittle, Ríchukú.
Snot, Neukhlí = nose-filth.
Silk, No word.
Silver, No word.
Sport, play, Chamcho, (inf.)
Sister, elder, Yáwa, younger, Loba. see Brother.
Sisterhood, Yába loba bum.
Sister-in-law, Wadyelmi.
Sitting chamber, Bwagdíkha.
Spider, Bájeringmo.
Smith, Teupteulé. Teupteucha.
Snake, Búsa.
Servant, Wáli, m. / Wálinima, f.
Soldier, Kyakyamkhusiba.
Sky, Dwamu.
Son-in-law, Dyalcha.
Son, my Wá—tá.* / thy Í—tá. / his Á—tá. } see child.
Shoulder, Balam.
Shoulder-joint, Bálám míchi.
Shepherd, Bhéra theulba.
Side, Chákhyam, Pum.
Star, Sorú.
Summit, top, Gnári. Ajuju.
Snow, Phúmu.
Summer, Hau-namti = hot or heat day.
Sweat, Gwaulau.
Storm, Gnolojú (= great wind).
Steam, Sam (breath).
Smoke, Kúni.
Strength, Sokti.
Song, Swálong.
Sow, Amo po. Khomi.
Sugarcane, Byar,†
Sun, Nam.
Sunshine, Nam.
Sunrise, Namdhapcho.
Sunset, Namwamcho.
Still, Hechopú.
Stone, Lung.
Stomach, Koja.
Shade, shadow, Bala.
Straw, Jim (grass).
Sword, Bétho (knife).
Shield, No name.
Tail. Méri.
Testicle, Kollosíchi.
Tiger. Gupsa.
Thigh, Jíla.
Thirst, Prákudwakcho. / Prakudwaktimi.
Thumb, Bombo.
Tooth, Khleu (French eu).
Tobacco, Kuni.
Turmeric, Byu'ma.
Toe, Khólibrepcho.
Toe, great, Kholi bombo.
Toe—nail, Gyang.
Tongue, Lyam.
Time, No name. Béla used.
To-morrow, Dilla.
Thread, Sále.
Thunder, Buk'bu.
Thief, Kuncha, m. / Kunchanima, f.
Theft, Kunchaniwa.
Tree, Sing. Dhyáksi.
Tree—bark, Sing kokte. Dhyaksi kokte.

* Wa ta-wo, my son: Wa tami, my daughter: Wa ta my child. Ta is child = Sontal and Uraon Dá. But ta is used also for son as sa is child and son in Burmese, which language has also the mi suffix, sami a girl = tami Bahing and Hayu.

† Sugar is Byar apwaku = juice of cane.

Tribe, Thok.
Uncle, Pat. Popo.
Uncle, Mat. Kuku.
Urine, Charníku.
Man's urine, Murynácharníku.
Goat's urine, Swongara acharniku.
Vein, Sagra.
Vegetable, Cheúle pále.
Vetch, pea, Kyangyalyangma.
Village, Dyal.
Villager, { Dyalpau, m. / Dyalpaunima, f.
Victuals, Jáchome.
Vice, sin, No word.
Voice, Syanda, (sound).
Valley, No word.
Vulva, Twárchi.
Wax, Khóye.
Wound, Bánám.
Wool, Bhéda swón.
Wall, Átha. Antha.
Weaver, Wápába.
Water, Pwáku.
Water-spring, Pwáku blo.
Walnut, { tree, Phoro sing. / fruit, Phoro sichi.
Wife, Ming.
Wrist, Gublemmichi.
Work, Ru.
Wizard, Krákrá.
Witch, Krákránima.
Witchcraft, Krákrániwa.
Widow, Khlúmi.
Widower, Khlúwa.*
Whore, No name.
Whoremaster, No name.
Wealth, Grokso.
Wing (bird's), Báphlem, (bá = fowl).
Witness, Kwóba. Tába.
Year, Thó.
Yesterday, Sanamti.
Yeast, No name.

Bahing Adjectives.

Good, { Neuba†, m. and c. gender. / Neubanima, f.
Bad, Ma neuba. Negative.
Deceitful, Cunning, } Hánba, m. and c. / Hánbanima, f.

* wa, and mi are suffixes of gender. The formative suffix cha is equivalent to wa, in words like lí-cha, a bow man; Kún-cha, a thief, &c. The feminine of wa is mi; of cha is micha, as Koja-cha, a glutton; Koja micha, a female glutton; or it is nima, as Kun-cha, a thief; Kunchanima, a female thief. Pau and pó are also masculine signs, whereof the former makes its feminine by adding nima; the latter by changing the po into mo, as dyal-pau, a villager; dyal paunima, a female villager; ryamni-po, an adulterer, ryamni-mo, an adulteress.

The participial suffix ba, which also makes nouns of the agent, and gives qualitives a substantival character, as thyak-ba, a or the hammerer: neu-ba, a or the good one, is another masculine suffix, which takes nima for its feminine.

But participial nouns in ba are often regarded as of all genders, and when used adjectivally, as all can be used, they take no sign of gender or number, or case; they precede the substantive which they qualify in their crude form, as neuba wainsa, a good man, neuba wainsadau, good men, neuba wainsake, of a good man.

The inherent relative sense of the participles enables them to dispense with any formative, but if it be specially necessary to express gender, such words when used as nouns, can take the wa and mi sex signs, and also the signs of number always supposing that their use is substantival.

Dravidian participles are formed from the gerunds (fide Caldwell) and need a formative to give them the relative and participial sense. Such is not the case with Kiranti participles, though these when used substantivally often takes the m, me, formative and always if the participles be of the impersonated kind. See verbs.

Observe that the Vocabulary throughout is so constructed as to be a clue to grammar as well as to vocables.

† Participial, like most of the following. See and compare the verbs, Neu to be good. Neu-gna, neu-ye, neu, I, thou, he, am good. Neu-ba who, or what is good, all genders; Dual, Neubadausi; Plural, Neu-badau. Neu = it is good. Root of verb and of noun. So Newari Bhing, which has Ji bhing, Chha bhing, Wo bhing for 3 persons, and Bhing—hma-gu for major and minor of gender, and Bhing hma, nihma and Bhing ping, for dual and plural.

Candid, { Má hánba. Neg. / Áje. Ajebwakba.
Malicious, { Deukha gíba, m. c. / Deukha gíbanima, f.
Benevolent, { Gyersi, { pába, m. c. / pabanima, f.
Industrious, { Pába. m. c. / Pábanima, f.
Idle, { Chwancha, m. / Chwanchanima, f.
True, or truth speaking, Áje. Áje bwakba, m. c. Áje bwakbanima, f.
False, or false speaking, { Limo. Limo bwakba, m. / Limo. bwakbanima, f.
Passionate, hasty, { Soksa, bokba, m. c. / Soksa bokbanima, f.
Placid, patient, Soksa má bokab. Neg.
Cowardly, { Níba, m. c. / Nibanima, f.
Brave, Má níba. Neg.
Constant-minded, Unchangeable, { Theumjásiba, m. / Theumjasibanima, f.
Inconstant, Changeful, { Theum májásiba. Neg.
Wasteful, profuse, { Wárba, m. c. / Wárbanima, f.
Niggardly, { Kákáchyákba, m. n. / Kákáchyákbanima, f.
Kind, gentle, { Theum neuba, m. c. / Theum neubanima, f.
Harsh, unkind, Theum máneuba. Neg.
Obedient, { Bíba, Bísiba, m. c.* / Bíbanima, Bísibanima, f.
Disobedient, Má biba. Má bisiba.
Masculine, Wamsake, Feminine, Minchake, { Genitival both.
Mad, idiotic, Átheum má neuba.
Sane of mind, Átheum neuba.
Licit, Páchome, m. f. n.
Illicit, Má páchome.
Bodily, Ramke, Mental, Theumke, { Genitival, both of these: com. gender.
Hungry, { Sóleumi byakba, m. c. / Sóleumi byakbanima, f.
Thirsty, Pwáku dwaktimi byakba.
Naked, { Áklancho bwakba, m. / ——— bwakbanimá, f.
Clothed, Phísiba, m. c. Phisibanima, f.
Libidinous (man), Ming dwakba, m.
Libidinous (woman), Wainsa dwakbanima, f.
Gluttonous, Kojacha, m. Kojamicha, f.
Drunkard, Dhékong- { -tuba, m. / -tubanima, f.
Drunken, Dukba, m. c. Dukbanima, f.
Foul-mouthed, Abusive, { Khíba, m. c. / Khíbanima, f.
Alive, Living, { Blenba, m. c. / Elenbanima, f.
Dying, Byakchopaba.
Dead, Byakba,† m. c. Byakbanima, f.
Sickening, Sick, { Rícho- { -paba, m. c. / -pabanima, f.
Sickened, sick, Ríbá, m. c. Ríbánima, f.
Getting well, Swáchopába.
Got well, Swába, m. c. Swabanima, f.
Healthy, Neuba, m. Neubanima, f.
Made well. Swápáng.
Strong, Sokticha, m. Soktimicha, f.
Weak, { Soktimáthíba, m. / Soktimáthibanima, f. / Sokti manthim, c.
Sleepy, Myelchopába, m. Myelchopabanima, f.
Asleep, Myelba, m. Myelbanima, f.
Waking, Syainscho- { -pába. m. c. / -pabanima, f.
Awake, Syains- { -siba, m. c. / -sibanima, f.
Awakening, Syainsipába.
Awakened, Syainsipána.
Young, Youthful, { Ákachíme, m. f.
Adult, { Swolacha, m. / Swolami or Swolamicha, } f.
Old, aged, Gná-wa, m. Gná-mi, f.
Handsome, { Rimba, m. f. n. / Rimsokpa, m. / Rimsongma, f.
Ugly, { Má rimba. / Má rimsokba. / Má rimsongma } Neg.
Tall, high, { Lába, com. gen. and m. / Lábanima, f.
Short, low, { Dékho lába, m. and n. / Dékho lábanima, f.
Great, big, { Gnólo, m. and n. / Gnólonima, f.

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* Bíba is the transitive, bísiba the intransitive forms. See verbs.

† Byakchopaba is literally who makes to die, and so of all similar words: but the form is doubtful, and in general the participle in bá, which is aoristic is used in neuter verbs exclusively to express both are senses of dying and dead, sickening and sick, the preterite particle being regarded as an appendage of transitives only.

Small, Akachime. Yáke.* See young.
Fat, { Syéneúba, m. and n. (well in flesh). / Syéneúbanima, f.
Thin, Ryamba, m. and n. Ryambanima, f.
Tired, } Bálba, m. and n.
Weary, } Balbanima, f.
Untired, fresh, { Má balba. / Má balbanima, } Neg.
Lame, Sokopá, m. n. Sokopánima, f.
Lamed, Sokopápána, c.
Blind, { Má kwoba, m. n. / Má kwobanima, f.
Blinded, Má kwobapana.
Deaf, { Má nimba, m. and n. / Má nimbanima, f.
Deafened, { Má nimbapana, m. n. / Má nimbanimapana, f.
Dumb, { Má bwakba, m. n. / Má bwakbanima, f.
Deaf and dumb, = idiotic, { Glaúd-wa, m. n. / Glaúdwanima, f.
Alone, solitary, { †Gícha or Ágícha, m. f.
Companioned, { Wárcha thiba, m. n. / Wárcha thibanimá, f.
Wise, { Jókba. Teuba. Mimba, m. n. / Jokbanima. Teubanima. Mimbanima, f.
Foolish, Májokba. Máteuba. Mámimba. Neg.
Learned, Parepába, m. Parepábanima, f.
Ignorant, Má pare pába.
Rich, Thíba, m. n. Thíbanima, f.
Poor, Má thíba, m. n. Má thíbanima, f.
Talkative, Bwakba, m. n. Bwakbanima f.
Silent, Líba bwakba, m. c.‡ (silent who remains).
Dirty = black, Kekem, m. f. n.
Dirtied, { Kekempana, m. c. / Kekemnimapana, f.
Clean = white, Bubum, m. f. n.
Cleansed, { Bubumpana, m. c. / Bubumnimapana, f.
Married, { Gróchya dyumba, m. / Gróchya dyumbanima, f.
Unmarried, { Gróchya mádyumba, m. / Gróchya mádyumbanima, f.
Taxed, { Chóba, m. Chóbanima, f. / Chóchome. n.
Exempt, { Má chóba. Má chóbanima. / Má chochome. Neg.
New, Aninta, m. f. n.
Old, worn out, Amaisam, m. f. n.
Ready, prepared, { Theumna (finished). / Mingba / Kina } (dressed as food).
Unprepared, Unmade, { Má theumna. / Má mingba. / Má kina. } Neg.
Ready, { Rimsiba (adorned), m. c. / Rimsibanima, f.
Unready, { Má rimsiba, m. / Má rimsibanima, f.
Common, abundant, Táchome, n.
Rare, scarce, Má táchome. Neg.
Public, apert, patent, Kwóchome.
Private, latent, not to be seen, Khleuchome.
Successful, Prosperous, { Neupába, caus. pres. part. / Neupana, cau. past. part. / Neupachome, c. f. p.
Unprosperous, Unsuccessful, { Má neupaba. / Má neupana. / Má neupachome, } Neg.
Saleable, Léchome, p. f.
Sold, Lena, p. p.
Purchaseable, Jyapchome, p. f.
Purchased, Jyamna, p. p.
Similar, Resembling, { Deuba, m. n. / Deubanima, f.
Dissimilar, Má deuba. Má deubanima.
The same, { Myemme or / Myemgno, } (that very one) m. f. n.
Other, different, Kwagname. Wangme, m. f. n.
Easy, doable, Páchome, p. f.

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* These two words are samples of adjectives proper. Such are very rare in this tongue wherein the qualifying words are mostly participles, usable too substantivally, like those formed by the affixes, cha and wa. This is another Dravidian trait; and the rarity of proper adverbs and prepositions, and the use of gerunds in lieu of the one and of nouns in lieu of the other, (see Adverbs and Prepositions) are two more such traits, to be added to those elsewhere set down.

† I, thou, he, am alone, is Wá gicha bwa-gna, Ygicha bwangé, Ágicha bwa = my, thy, his loneliness.

‡ The root bwá, to be (sit) and to speak, can hardly be distinguished in the participles.

Difficult, not doable, Má páchome.

Changeful, Changeable, { Phasiba,* p. n. / Phaschopaba, p. n. (about to change).

Changed, { Phásiba (self.) / Phána (other, tr.)

About to be changed, Pháchome.

Caused to be changed, Phásipána, c. ref. Phápána, c. tr.

Orderly, set in order, { Má hulsiba, n. / Má hulba, tr. / Má limsiba, n. / Má lipba, tr.

Disordered, Disorderly, { Hulsiba, n. / Hulna, tr. / Limsiba, n. / Limna, tr.

About to be disordered, Lipchome.

Having, possessing, tenens, Thiba, m. c. Thibanima, f.

Not having, Wanting, { Má thiba, m. c. / Má thibanima, f.

Ornamented, Adorned, { Rimba, n. / Rimsiba, refl. / Rimpana, tr.

Plain, { Má rimba. / Má rimsiba. / Má rimpana.

Useful, Sichome, p. f. tr.

Useless, Má sichome, Neg.

Quick-moving, active, Grukba, m. c. Grukbanima, f.

Slow moving, lazy, inert, Má grukba, Neg.

Wholesome, eatable, Jáchome.

Unwholesome, Májáchome.

Manufactured, wrought, Pána.

Manufacturable, Páchome.

Sharp, Héba, n. p.

Sharpened, Hépána, tr. p.

Blunt, Má héba.

Bluntened, Má hépána.

Grinded, Khrina.

Grindable, Khrichome.

Spun, Pánna.

Woven, Pána.

Platted, Pána.

Spacious, wide, ample, Bhyappa.

Contracted, narrow, Má bhyappa.

Moving, capable of self-motion, Dukba,† n. part. m. f. n. Dukbanima, f.

Moveable, capable of being moved, Dukchome, tr. p. f.

Motionless, Má dukba, m. n.

Immoveable, Má dukchome, tr.

Moved,† self, Dukba.

Moved, other, Dungna.

Caused to be moved, Dungpána.

Figured, self, Rám dyumba.

Figured, other, Rám dyumpána.

Figureable, Rámdyum pachome.

Unfigureable, Rámdyum má pachome.

Luminous, shining, Chyarba (self,) n.

Self-illumed, Chyarsiba, refl.

Illumed by other, Chyarpána.

Illuminable, Chyarpachome.

Dark, Namrikba.

Darkened, Namringpána.

Flaming, burning self, Hoba (fire and candle).

Kindled, Inflamed, Made to flame, } Hopána.

Kindleable, Inflamable, } Hopáchome.

Burning, in process of being consumed by fire, Deupba.

Burnt, consumed by fire, Deumpána.

Consumable by fire, Deumpachome.

Extinguishing (self) going out, Byakba.

Extinguished by another, Byangpána.

The upper, superior, Háteungme, m. f. n.

The lower, inferior, Háyungme.‡

Right, Jumrolame.

Left, Perolame.

Central, Alimbudime.

Eastern, Namdhapdikhalame.

Western, Namwamdikhalame.

Northern, Háteulame.

Southern, Háyulame.

Passable, Accessible, } Gwakchome.

Impassable, Mágwakchome.

Cultivated field, Jóna.

Culturable, Jóchome.

Uncultivated, Ma jóna.

Uncultivable, Má jóchome.

Fruitful, rich (soil), Neuba (good).

Barren, sterile, Má neuba.

Sandy, No word.

Clayey, Phélépheleme.

Calcarious, Chunnungme.

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* Be changed is pháso = change thyself. Change it is pháto. The former gives for participles phásiba and phaschopaba = what changes or is about to change; and the latter, phábá, the changer, and phána, the changed.

† The participle of Neuter verbs is single and aoristic, Dukba, is changing and changed, et sic de cæteris. ‡ Hateu, top, above: háyu, below, bottom.

Saline, Yuksinungme.
Muddy, Kyelchome.
Dusty, Byerbakhapinungme.
Brackish (water), Yuksinungme.
Fresh, Sweet, { Túchome. / Neúba. / Broba.
Flowing, Gwakba.
Still, Má gwakba.
Deep, Gleumba.
Shallow, Má gleumba.
Windy, stormy (weather), { Júnam.* / Júkhime. / Júkhitame.
Fine, fair, Neuba.
Cold, { Junamme. / Júmi byangme. / Júkhitame.
Hot, { Haulomi. / Haulomi byangme. / Haulau dyumme.
Sunshiny, Namneume.
Cloudy, Koksyalbwalme.
Rainy, Ryáwayume.
Cold (water), Chikba.
Hot (water), { Gleugleum, conj. / Gleugleum-me, disj.
Moist, sappy green (wood), Ápwákunungme.
Juicy (fruit), Ápwakunungme.
Juiceless, sapless, Ápwákumanthime.
Wooden, Singke.
Woody, timber bearing, Wooded, } Singdhyaksi-bwagdikhá.
Stony, made of stone. Lungke.
Stony, stone bearing (place), Lung bwagdikha.
Iron, made of iron, Syelke.
Iron-producing, Syelgiba.
Leathern, made of leather, Kwoksyeuke, Kokseke.
Skin-bearing (animal), Kwoksyeu thiba. Kokse thiba.
Wet, Dry } clothes, &c. { Moba. / Sheuba.
Wooded (country), { Sabala bwakba. / Sabala bwakdikha.
Open, Áklauchom, (naked).
Jungly, Sábala dyumme.

Coloured, { Ryangsiba, self. / Ryangna, by other.
Caused to be coloured, Ryangpána.
Colourless, { Bubum (white). / Má ryangna. / Má ryangsiba.
Colourable, Ryakchome.
Red, Lalam.†
White, Bubum.
Black, Kyákyám.
Blue, No name.
Green, Gigim.
Yellow, Womwome.
Sweet, Jijim.
Sour, Jeujeum.
Bitter, Kaba.
Ripe, Jiba.
Ripened, Jiba, n. (self). Jipana tr. (other).
Raw, Achekhli.
That is raw, Achekhli bwakba.
That is made raw, Achekhli pana.
Rotten, (flesh, fruit, &c.) Jyipba.
Rotten (wood, &c.) Chyamba.
Coarse, Fine, } No words.
Rough, Khwárbekhwárbem.
Smooth, Phélephélem.
Polished, Phélephélem.
Unpolished, Má phélephélem.
Straight, Dyomba.
Crooked, { Gukba. / Gung-gung, or / Gung-gungme.
Full, Dyamba.
Filled, Dyampána.
Empty, Áshéti.
Emptied, Áshétipána.
Solid, Dyamba.
Hollow, Áshéti.
Heavy, Hyalba.
Light (levis), Hamba.
Great, Gnolo.
Small, Yáke.
Long, Jheúba.
Short, Má jheúba.
Wide, Bhyakba.
Narrow, Má bhyakba.
High, Lába.

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* Wind and windy, and cloud and cloudy, &c. are confounded usually: like "cold" in English which is both substantive and adjective. So also heat and hot.

† Lálam adjectival. Lalamme substantival = Newári, Hyáwun and Hyáwúntgu and lál, lál wala or red and the red one. So Bubum and Bubumme Gigim and Gigimmo, &c. The affixes jokpa (m) and jongma (f) are often substituted for me in reference to colour kyakyajokpa, the black.

Low, Má lába. Dékholába.
Angular, Kona-bwakba.
Round, Khirkhirme.
Spherical, Pulpulme.
Pointed, Jeujeume.
Unpointed, Má jeujeume.
Edged, Hé'ba.
Unedged, Má hé'ba.
Broken, round things, Burst, Bukba, Pwongna.
Broken (long things), Jikba. Jingna.
Torn (cloth, &c.), Jiba,* n. China, tr.
Split (wood), Yésiba, int. Yéna, tr.
Intire, by negative prefix to all the above.
Porous, Chapba.
Imporus, Má chapba.
Open, Hongsiba.
Opened, Hongna.
Opening, about to open, Hongschopaba.
Shut, Tyangsiba.
Shutted, Tyangna.
Shutting, about to shut, Tyangschopaba.
Spread. Hamsiba, n. Hamna, tr.
Folded, Plemsiba, n. Plemna, tr.
Expanded, blown (flower), Boba.
Caused to blow, Bopána.
Expanding, about to expand, Boschopaba.
Closed, shut = not expanded, Má boba.
Tight, Khimsiba, n.
Tightened, Khimna, tr.
Loose, Thyelvim.
Loosened, Thyelvim pána.
Unsteady, loose, Má jásiba.
Shaking, Má jána.
Fixed, firm, Jásiba, n. Jána, tr.
Cooked, Kína.
Boiled, Pwákumikina.
Roasted, Gryamna.
Grilled, Cheuna.
Hairy, Swon thiba.
Hairless, Swon má thiba or Swon manthi.
Feathered, Swon thiba.
Unfeathered, Swon má thiba or Swon manthi.
Rising or risen (sun), Dhapba.
Sitting or set (sun), Wamba.
Issuing, coming out or come out (being) Gluba.
Entering or entered (being) Woba.

Falling (being) Dokba, n.
Fallen, Dokba, n.
About to fall, Dokchopaba.
Falling (thing), Uba.
Fallen (thing), Uba.
Rising (being) Rapba.
Remaining, risen or standing, Rapsobwakba.
Risen or stood, Rapba. Rapsobwakba.
Raising, Rampaba.
Raised, Ramna, tr. Rampana, caus.
Putting down (man), Jyeulba.
Put down (things), Jyeulna.
Sitting, Bwakba. Nisiba.
Seating, Bwang paba. Ni paba.
Seated, Bwápána. Nina.
Lying down. Glesiba, Ipba.
Laid down, Glesiba Ipba, n. Glesipana Impana, tr.
Waking, Syainsiba.
Waked, Syainsiba.
Awakening, Syainsipaba.
Awakened, Syainsipana.
Sleepy, Myelcho dwákba.
Asleep, Myelba.
Sleeping, Myelba.
About to sleep, Myelchopaba.
Domestic, home made, Dwábodyel dim.
Foreign or foreign made, Wangmedyel dim.
Rustic, Dyelpo, m. f.
Loving, Desirous, Desiring, (being) Dwakba, m. Dwakbanima, f.
Loveable, Desirable, Dwakchome.
Written, Ryangna.
Read, Parepana.
Eaten, Jana.
Drank, Túna (pausing accent).
Payable, Chochome.
Paid, Choona (pausing accent).
Well odoured, Árineubame.†
Stinking, Arimaneubame.
Having odour (thing) or smelling (man), Namba.
Belonging to a Tibetan or native of Tibet, Leuchake, m. Leuchanimake, f.

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* Bukba, Jikba, as participles of neuter verbs which are aoristic, wear the form of present participles and as adjectives mean breaking as well as broken, &c.

† Me, m. affix, is a formative of all 3 genders = hma, gu of Newári, save that these are major and minor of gender. Mé like hma, gu, attaches to all qualitives used substantively superadded to the gender sign as, gná-wá, gwa-mi = old (man and woman) whence gnáwame, gnámime = the old ones, male and female. So swalo-cha-mi = mature, male and female, whence swalocháme, swalomime.

Tibetan, or produced in Tibet (thing), Leuchadyeldim. / Leuchadyelke.*
Nepalese, native of Nepal, No name.
Belonging to a highlander or native of Hills, Syértichake, m. / Syértenimake, f.
Highland thing, Syertedim or / Syertedyeldim.
Of person of the plains, Dheptechake, m. / Dheptechanimake, f.
Produce of plains, Dheptedim.
European (person), Bubum-ramcha, m. / Bubum-ramchanima. f.
European (goods), Bubum-ramthiba dyeldim.
Woollen, made of wool, Unke.
Wooly, wool-bearing, Unthiba.
Hairy, made of hair, Swonke.
Hairy, (hair-bearing), Swonthiba.
Iron, made of iron, Syalke.
Golden, Syeunake.
Silver, made of silver, Chándike.
Wooden, made of wood, Singke.
Woody, full of trees, (place), Dhyaksi-bwagdikha.
Jungley, full of jungle, Sábálá bwag-[dikha.
Eye-having (being), Michi thiba.
Foot-having (being), Kholi thiba.
Wealthy (being), Grokso thiba.
Wealthy (place), Grokso-bwagdikha.
Grain-having (man), Búra thiba.
Grain-producing (field), Búra neudikha.
Grain-abounding (place), Búra bwag-dikha.†

Comparison of Adjectives.

Great, Gnolo.
As great as this, Yam khwome gnolo.
Greater than this, Yam ding gnolo.
Greatest of all, Haupe ding gnolo.
Very great, Thé gnolo.
Small, Káchim. Ákáchim.
Small as this, Yam khomekáchim.
Smaller than this, Yamding káchim.
Smallest of all, Haupe dingkáchim.
Very small, Thé káchim.
Cold, Chikba.
Colder, Yam ding chikba.
Coldest, Haupe ding chikba.
Very cold, Thé chikba.
Hot, Gleuba.
Hotter, Yam ding gleuba.
Hottest, Haupe ding gleuba.
Very hot, Thé gleuba.

Numerals.

Cardinals.
1, Kwong.
2, Niksi.
3, Sam.
4, Lé.
5, Gno.
6, Rukba.
7, Channi.
8, Yá.
9, Ghú.
10, Kwaddyum.
11, Kwaddyum kwong, = ten (and) one.
12, ,, niksi.
13, ,, sam.
14, ,, lé.
15 &c. ,, Gnó.
20, Ásim, = a score, Kwong ásim, / = one score.
21, Ásim kwong, = a score (and) one. Kwong ásim, one score = / Kwong and one.
22, Ásim niksi. Kwongásim niksi.
30, Kwong ásim, kwong áphlo, = one score, one its half.
31, Kwong ásim, kwong áphlo kwong, = one score, one half (and) one.
32, Kwong ásim, kwong áphlo niksi, = one score, and one half and two.
40, Niksi ásim, = two score.
41, Niksi ásim kwong.
42, Niksi ásim niksi.
50, Niksi ásim áphlo = two score (and) its half.
51, Niksi ásim áphlo kwong.
52, Niksi ásim áphlo niksi.
60, Sam ásim.
70, Sám ásim áphlo, = three score (and) a half.
80, Lé ásim.
90, Lé ásim áphlo.
100. Gnó ásim, = five score.
101, Gnó ásim kwong.
102, Gnó ásim niksi, = five score (and) two.
Ordinals. None.

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* Ke is the general sign of relation when one substantive only is used. When two are expressed, the second takes the á prefix (his, her, its) unless the relation be local and then dim (diem = in of) is used instead of the á; e. g. hand of man, Muryu á gu. Rice of bazar, bazar dim shéri.

† Bwagdikha = the place where is: dikha useable only with a verb: bwag from bwáko, esse in loco.

Adverbials.

Once, Kwábálá.
Twice, Nip pálá.
Thrice, Sap pálá.
Four times, Lep pálá.
Five times, Gnó pálá.
Six times, Rú pálá.
Seven times, Chá pálá.
Eight times, Yá pálá.
Nine times, Ghú pála.
Ten times, Kwaddyum pálá.
Firstly, } Wanting, save as they coin-
Secondly, } cide with the last.

Numeral adjuncts.

They are doubtfully ascribable to this tongue, or falling so fast out of use, that what remains is a mere fragment. I shall illustrate by comparison with Newári in which these generic signs are undoubtedly normal and in full use. Báhing, like Newári, has no division corresponding to the fully developed gender, m. f. n. It has not even, as Newári has, a division correspondent to the logical gender, or beings and things, which is equivalent to the major and minor of gender in the plural of Dravirian nouns and verbs also.

English.	*Newári.*	*Báhing.*
Beings	Hma	Li?
Things	Gú	
Rationals	—	—
Brutes	—	—
Vegetalia	Má.	Ápúm
Plants		
Timber trees	Sima.	Sing
Soft trees or grasses	Má.	Ápúm
Logs	Ká	—
Weapons	Pú	Syal
Implements		
Pairs	Jú	—
Flowers	Phó	Lí
Fruits	Gó	Bwom
String of animals	Tya. Jhó	Chyarchyar
Heap of things	Dón. Púcha	Khumna
Herd of animals	Batháng.	—
Days	Nhu.	Kha

In the use of these signs first comes the numeral, then the sign, and then the thing or being specified, e. g. Newári, Chha ma si ma, Báhing, Kwong sing ápúm = one (timber) tree.

Chha má singhali má, N.; Kwo ápúm Sáli ápúm, B, = one chesnut tree.

Swó nhu nhi N; Sam kha namti, B, = three days. Nigo santola si, N; Ni bwom santola sichi, B, = one orange.

Chhapukhwón, N; Kwosyal bétho, B, = one sword. Chhago singhali si N; Kwobwom seti sichi, B, = one chesnut fruit.

Báhing Pronouns.

Singular.

I, Gó.
Thou, Ga.
He, she, it, Harem, Yam, Myam.

Dual.

We, inclusive, Gósi.
We, exclusive, Gósuku.
Ye, Gási.
They, { Harem dausi. Yam dausi. Myam dausi.

Plural.

We, inclusive, Gói.
We, exclusive, Góku.
Ye, Gani.
They, { Harem dau. Yam dau. Myam dau.
This, Yam. } All genders: no sign.
That, Myam. }

Dual.

These, Yam dausi.
Those, Myam dausi.

Plural.

These, Yam dau.
Those, Myam dau.
Self, Daubo (Dwabo).

Dual.

Dwabo dausi.

Plural.

Dwabo dau.
Myself, Wadaubo.
Thyself, Idaubo.
His, her, its-self, Ádaubo.

Dual.

1. { Wasi daubo, excl. Isi daubo, incl.
2. Isi daubo.
3. Asi daubo.

Plural.

1. { Wake daubo, excl. Ike daubo, incl.
2. Ine daubo.
3. Ane daubo.

Any, some, person, Seú: subs. and adj. m. and f.

Dual.

Seudausi.

Plural.

Seu dau.

Any, some, thing, Mára: subs. only: n.

Dual.

Mára dausi.

Plural.

Mára dau.

Another, Kwágnáme.

Dual.

Kwágnáme dausi.

Plural.

Kwágnáme dau.

Many or much, Dhékong: subs. adj.: m. f. n.

No dual or plural.

Few. Little, Dékho: subs. adj.: m. f. n.

The same, Myem.

Dual.

Myem dausi.

Plural.

Myem dau.

How many? And how much? } Gisko, { subs. adj.: m. f. n.

As many, much, Gisko, So many, much, Metti, } ditto.

All, Hwappe, ditto.

Half, Ákwáphala. ditto.

The whole, Hwappe Haupe.

Who? inter. { Seu. { Singular. subs. adj. m. and f. / Seu dausi. Dual. / Seu dau. Plural.

Who? rela.* { Gyem, sing. subs. adj. m. f. n. / Gyem dausi, D. / Gyem dau, P.

Who? correl. { Myem, Sing. subs. adj. n. / Myem dausi. Dual. / Myem dau, Plural.

What? { Mára, Sing. subs. adj. m. f. n. / Mára dausi, Dual. / Mára dau, Plural,

What, rel., Mára.

Whát, correl. Maem.

Dual and Plural, Like.

Interrogative for both.

Whoever, Whatever, } Gisko, { subs. adj. m. f. n.

Dual, Gisko dausi, Plural, Gisko dau, } ditto.

How many? Gisko, As many, Gisko, } ut supra.

So many, Metti.

Dual, Metti dausi.

Plural, Metti dau.

Either, Yemka. Myemka.

Dual, Yemka dausi. Myemka dausi.

Plural, Yemka dau. Myemka dau.

Both, Nimpho, subs. and adj. m. f. n.

Several, No word.

My, Wá'.†

Thy, I.

His, her, its, Á.

Dual.

My, Wási, excl.† I-si, incl.

Thy, I-si.

His, her, its, Ási.

Plural.

Our, Wake, excl. Ike, incl.

Your, Ini.

Their, Áni.

Mine, Wáke.

Thine, I'ke.

His, hers, its. Áke.

Dual.

Our's, Wasike, excl. Isike, incl.

Your's, I'sike.

Their's, Ásike.

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* Gyem takes the á prefix and is used interrogatively in a relative sense: which of these persons or things will you take? A-gyemme ládi, wherein the disjunct form is employed, gyemme.

† The words father and mother in conjunction with their pronominal adjuncts are irregular a-pa { wasi-po { wake-po. / isi-po { ikepo. ; i-po isi-po ini-po. ; a-po asi-po áni-po. } Singular, Dual and Plural.

other relations as popo, uncle, though but iterations of po, are regular, e. g. wá-popo; i-popo; a-popo, &c.

Plural.

Our's, Wakke, excl. Ikke, incl.
Your's Ínike.
Their's, Ánike.
Own, Dauboke.
1. My own, Wa dauboke.
2. Thy own, Í dauboke.
3. His, her, its own, Á dauboke.

Dual.

1. { Wasi dauboke, excl. / Ísi dauboke, inc.
2. Ísi dauboke.
3. Ási dauboke.

Plural.

1. { Wake dauboke. / Íke dauboke.
2. Ine dauboke.
3. Áne dauboke.

1. Mine own, Wake dauboke.
2. Thine own, Íke dauboke.
3. His, her, its own, Áke dauboke, &c. like the disjunctive mine.

Báhing Verbs.

Cause, Páto, tr. Pápáto, causal.*
Cause not, Má páto.
Can it, be able for it, { Chápo, tr. / Chamso, intr.†
Do not can it, Má chápo. Má chámso.
Cause to can or Enable { Chámpáto, tr. / Chámpáso, intr. / Chámpáyi, passive. / Chámpápáto, causal, tr. / Champápáso, intr. caus. / Chámpápáyi, pas. caus.
Enable not, Má champáto, &c.
Be born, Giko, n.
Give birth to or beget, { Kiko, trans. / Kingso, refl. / Kingyi, pas. / Gingpáto, tr. causal. / Gingpáso, intr. causal. / Gingpáyi, pas. causal.
Cause to beget or produce, { Kingpáto, tr. / Kingpáso, reflex. / Kingpáyi, passive.
Be not born, Má giko, Neg.
Beget or produce not, Má kiko, Neg.

Live, { Bleno. (Blenno), n. / Blenpáto, tr. causal. / Blenpáso, intr. causal. / Blenpáyi, passive.
Live not, Má bleno (blenno).
Die, { Byákko, n. / Byangpáto, tr. causal. / Byangpáso, intr. caus. / Byangpáyi, passive.
Kill, { Sáto, tr. / Sáso, reflex. tr. / Sáyi. passive. / Sapáto, tr. caus. / Sápáso, reflex. caus. / Sápáyi, passive.
Be (sum), Ká. Khe. Gno. Irreg. Defec.
Be‡ (maneo), { Bwakko, n. (sit). / Bwangpáto, tr. causal. / Bwangpáso, intr. caus. / Bwangpáyi, passive.
Become, { Dyúmo, n. / Dyúmpáto, tr. causal. / Dyúmpáso, intr. causal. / Dyúmpáyi, passive.

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* This is the causative of all verbs and is derived from the root pá, to do or make. It answers to the Háyu form "do for another." In Báhing it is the causative, also bearing that sense.

† These are = wonto and woncho of Háyu, the definite and indefinite of Hungarian; in English can it or be able for it and be able simply. Chápo forms the potential of all verbs.

‡ Be in a certain place = sit. Sheer entity is expressed by Ka, Khe, Gno, defectives.

Have, possess, { Thiwo Neg. Ref. / Bwálá, Neg. Def.
Make to have, Cause to possess, { Thiyáto, tr. / Bwálápáto, tr.
Do, make, perform. { Páwo, tr. / Páso, reflex / Páyi, passive,* / Pápáto, tr. c. / Pápáso, intr. c. / Pápáyi, passive, c.
Keep doing, { Páwomukho bwákho, n. / Pásogno bwákho, n.
Cease doing or to do, Pácho pléno, n.
Suffer, { Tyáro, tr. / Tyárso, reflex. tr. / Tyári, pas.
Cause to suffer, { Tyárpáto, tr. / Tyarpáso, reflex. / Tyárpáyi, passive.
Observe or Examine, { Kwó-gno, tr. (see). / Kwó-so, reflex. / Kwó-yi, passive. / Kwó-páto, tr. causal. / Kwó páso, intr. causal. / Kwó-páyi, passive, causal.
Understand, Know, Think, { Teuto. Jokko. Mimto, tr. / Teuso. Jongso. Mimso, reflex. / Teuti. Jongyi. Mimti, passive.
Cause to understand, Explain, { Teupáto. Jongpáto. Mimpáto, tr. c. / Teupáso. Jongpáso. Mimpáso, intr. c. / Teupáyi. Jongpáyi. Mimpáyi, pas. c.
Feel, Be sensible of, bodily, { Limléto, trans. / Limléso, reflex. / Limléyi, passive.
Remember, { Mimto, trans. / Mimso, reflex. / Mimti, passive. / Mimpáto, tr. causal. / Mimpáso, reflex. causal. / Mimpáyi, passive, causal.
Forget, { Plendo, tr. / Plenso, tr. reflex. / Plendi, passive. / Plen-pá-to-so-yi, causal.
Desire, Lust for love, { Dwakko, intr. / Dwakto, tr. / Dwangso, reflex. / Dwakti, passive. / Dwangpá-to-so-yí, c.
Hate, { Grámdo, tr. / Grámso, reflex. / Grámdi, passive. / Grámpá-to-so-yi, c.
Recognise, { Syanto, trs. / Syanso, reflex. / Syanti, passive. / Syanpáto, &c. c.
Be modest, Gnúne bóko, n.
Make modest, { Gnúne bok-pá-to-so-yi, tr. or / Gnúne pok-ko-so-yi, tr.
Laugh, Riso, n.
Make laugh, Risipá-to-so-yi, c.
Laugh at, irride, Rito. Riso. Riti, tr.
Weep, Gnwákko, n.
Make weep, Gnwángpá-to-so-yi, c.
Dance, Silimóvo,† tr.
Make dance, Silimópá-to-so-yi, c.
Sing, Swálong páwó, tr.
Make sing, Swálong pápáto-so-yi, c.
Hope, No such word.
Fear, Gnito, n.
Frighten, { Gnipáto, tr. c. / Gnipáso, reflex. c. / Gnipáyi, passive.
Cause to frighten, { Gnipápáto, tr. / Gnipápáso, reflex. / Gnipápáyi, p.
Tremble, { Khiwo, n. / Khipáto, causal. / Khipáso, c. reflex. / Khipáyi, c. p.
Be good, Nyúwo or Nyúba bwákko, n.
Become good, Nyúba dyúmo, n.

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* Observe, once for all, that the three forms of the transitive (primitive and causal alike) refer to him (any one) to self and to me (the speaker). Thus sá-to, kill him or it; sá-so, kill thyself; sá-yi, kill me; that in verbs like to do, the sense is modified of necessity but without essential change; and that the passive has no imperative of the 2nd or 3rd person. Hence the entry under the 1st, *and* hence as will be seen in the grammar, the existence in the language of certain special forms of the verb subsidiary to the so-called passive.

† Sili = a dance. The verb móvo has the separate sense of to fight, but is used with many nouns to verbalize them.

Make good, { Nyúto, tr. / Nyúso, reflex. / Nyúni, passive. / Nyúba dyumpáto, tr. c. / Nyúba dyumpáso, refl. c. / Nyúba dyumpáyi, pas. c.

Be glad, Ithim nyúlá. Gyerso.

Gladden, { Áthim nyúpáto, tr. / Ithim nyúpáso, reflex. / Wáthim nyúpáyi,* passive. / Gyérsi páto-páso-páyi.

Be vexed, sad, { Ithim má nyúla. / Deukha giso.

Vex, sadden, { Deúkha giwo. / Áthim mányúpáto.

Be satisfied, Rúgno, n.

Satisfy, Rúpáto, c.

Utter, speak, Articulate, { Bwakko, n. / Bwangpáto, c. tr. / Bwangpáso, c. reflex. / Bwangpáyi, c. passive.

Relate, tell, speak to or of, { Só-gno. Sódo, tr. / Só-so. Sóso, refl. / Sóyi. Sódi, pas.

Cause to relate, to tell, &c. { Sopáto, tr. / Sópáso, refl. / Sópáyi, p. } For both the above.

Talk, make discourse, { Ló páwo, tr. / Ló páso, reflex. / Ló páyi, passive.

Cause to talk, { Ló pápáto, tr. / Ló pápáso, reflex. / Ló pápáyi, passive.

Tell my, thy own, his, tale, { Wá ló sógno. / Í ló sógno. / Á ló sógno.

Be silent, Liba bwakko, n.

Silence, { Liba bwangpáto, tr.* / Liba bwangpáso, reflex. / Liba bwangpáyi, p.

Cause to silence, { Liba bwá pápáto, tr. / Liba bwá pápáso, reflex. / Liba bwá pápáyi, p.

Call, summon, { Bréto, tr. / Bréso, reflex. / Bréti, passive.

Cause to summon, { Brépáto, tr. / Brépáso, reflex. / Brépáyi, passive.

Shout, vociferate, { Syanda páwo, tr. / Syanda páso, refl. / Syanda, páyi. p.

Learn = teach thyself, Cháyinso, n.

Teach, Cháyindo, tr.

Teach thyself, Cháyinso, reflex. tr.

Cause thyself to be taught, } Cháyinsipáso, c. r.

Teach me, Cháyindi, passive.

Cause me to be taught, Cháyinsipáyi, c. p.

Read, { No such word. / Kwo-gno = see, is used.

Write, { Ryakko, tr. / Ryangso, tr. reflex. / Ryangyi, p. / Ryakti p. = write for, or to me.

Cause to write, { Ryángpáto, tr. / Ryángpáso, reflex. / Ryángpáyi, p.

Ask, question, { Hilo páwo, tr. / Hilo páso, reflex. / Hilo páyi, p.

Cause to ask, or question, { Hilo pápáto, tr. / Hilo pápáso, reflex. / Hilo pápáyi, p.

Answer, Só-gno, tr. (see tell).

Beg, solicit, { Puno (Punno), tr. / Punso, refl. Punyi, p.

Cause to beg, { Pun páto, tr. / Pun páso, reflex. / Pun páyi, p.

Get, obtain, find, { Tá-wo, tr. / Tá-so, reflex. / Tá-yi, p.

Cause to get, &c. { Tá-páto, tr. / Tá-páso, reflex. / Tá-payi, p.

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* Means, may I be gladdened. Be gladdened, the sheer passive, cannot be expressed. I, thou, he, is gladdened = Wáthim nyúpáyi, Ithim nyúpáne, Athim nyúpáda. The last = he gladdens and is gladdened. Gyérso and gyérsipáto are much closer expressions for be glad and gladden. The others are formed from thim or theum, the heart, and the conjunct pronouns, opposite is the phase of the active and passive voices.

Active.	*Passive.*
Áthim nyúpádu.	Wáthim nyúpáyi.
Áthim nyúpádi.	Ithim nyúpáne.
Áthim nyú páda.	Athim nyúpáda.

Approve, like, { Dwakto, tr.* / Dwangso, reflex. / Dwakti, p.

Cause to like, &c. { Dwang páto, tr. / Dwang páso, reflex. / Dwáng páyi, p.

Dislike, Disapprove, { Mádwakto. / Mádwangso, &c. / Mádwakti.

See, { Kwó-gno, trans. / Kwó-so, reflex. / Kwó-yi, passive.

Show, { Kwó páto, tr. c. / Kwó páso, reflex. c. / Kwó páyi, p.

Hide, lie hid, Khleúso, n. and reflex.

Hide it, Khleúto, tr.

Hide me, Khleúti, p†

Cause to be hid, or to be concealed, { Khleu páto, tr. / Khleu páso, reflex. / Khleu páyi, p.

Cause to cause to be hid, { Khleu pápáto, tr. / Khleu pápáso, refl. / Khleu pápayi, p.

Hear, { Ninno, tr. / Ninso, reflex. / Ninyi, pas.

Cause to hear, { Nin páto, tr. / Nin páso, reflex. / Nin páyi, passive.

Taste, { Dapto, tr. / Damso, reflex. / Dapti, passive.

Cause to taste, { Dam páto, tr. / Dam páso, reflex. / Dam páyi, passive.

Blow, apply breath, { Múto, tr. / Múso, reflex. / Múyi, passive.

Cause to blow, { Mú páto, tr. / Mú páso, reflex. / Mú páyi, passive.

Smell, { Námo or Nammo, tr. / Namso, reflex. / Námyi, passive.

Cause to smell, { Nam páto, tr. / Nam páso, reflex. / Nam páyi, passive.

Touch, { Khúto, tr. / Khúso, reflex. / Khúti, passive.

Cause to touch, { Khú páto, tr. / Khú páso, reflex. / Khú páyi, passive.

Eat, { Jáwo. Báwo, tr. / Jáso. Báso, reflex. / Jáyi. Báyi, passive.

Cause to eat, = feed, { Já páto, tr. / Já páso, reflex. / Já páyi, pas.

Drink, { Túgno, tr. / Túso, reflex. / Túyi, pas.

Cause to drink, { Tundo, tr. / Tunso, reflex. / Tundi, pas.

Be intoxicated, Dúko.‡ Neutro, pas.

Make intoxicated, or intoxicate, { Dung páto, tr. / Dung páso, reflex. / Dung páyi.

Vomit, { Méwo, tr. / Méso, reflex. / Meyi, pas.

Cause to vomit. { Mé páto, tr. / Mé páso, reflex. / Mé páyi, pas.

Sleep, Ipo, n.

Cause to sleep, { Im páto, tr. c. / Im páso, reflex. c. / Im páyi, pas. c.

Cause to sleep, { Ipto, tr. / Ipso, refl. / Ipti, pas. } These are equal in sense to the last, and exhibit a 2d mode of making causals.

Wake, Syáyinso, n.

Awaken, { Syáyinsi páto, tr. / Syáyinsi páso, reflex. / Syáyinsi, payi, pas.

Dream, { Gnámung mówo, tr. / Gnámung móso, reflex.

Cause to dream, { Gnámung mópáto, tr. / Gnámung mópáso, reflex. / Gnámung mópáyi, pas.

Fart, Piso, n. Pisipáto, &c. causal.

Fart at him. Pito. Piso. Piti, tr.

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* The intransitive is dwakko = approve, whence transitive dwakto approve it like the Hungarian determinate and indeterminate.

† In this as in most verbs, the three forms refer respectively to me (Khleuti) to him, or it, any being or thing (Khleuto), and to self (thyself) (Khleuso) and so precisely in the causal also, Khleu páyi, Khleu páto and Khleu páso.

‡ This neuter is conjugated as a passive Dungi, Dunge, Duga.

Shit (cace), Wási páto, &c. causal.
Cace supra ali quid vel aliquem, Wáto, tr.
Piss (minge,) { Chárso, n. / Chársi páto, causal.
Imminge, Chárto, &c. tr.
Kiss (give and take osculo), { Chuppáwo, tr. / Chuppáso, reflex. / Chuppáyi, pas.
Cause to kiss. Chuppá páto, &c. c.
Kiss (coë), { Leuwo, tr. (French eu). / Leuso, reflex. / Leuyi, pas.
Be kissed, Leupáso, reflex. causal.*
Sneeze, { Háchhún mówo, &c. tr. / Háchhún mópáto, &c. causal.
Spit, Téwo, tr. Téso, reflex. Téyi, pas.
Cause to spit, { Té páto, tr. / Té páso, reflex. / Té páyi, pas. / Té pápáto, &c. D. C.
Belch, { Byamne mówo, &c. tr. / Byamne mópáto, &c. causal.
Cough, { Syókhé mówó, tr. / Syókhé mópáto, &c. c.
Hiccup, { Dikumi dokto, &c. tr. / Dikumi dongpáto, &c. c.
Swallow, { Dwakko, tr. / Dwangso, reflex. / Dwangyi, pas.
Yawn, { Hapsa mówo, tr. / Hapsa mópáto, &c. c.
Lick, { Tukko, tr. / Tungso, reflex. / Tungyi, pas.
Cause to lick, { Tung páto. / Tung páso. / Tung páyi.
Suck, { Bippo, tr. / Bimso, reflex. / Bimyi, passive.
Cause to suck, { Bim páto, tr. / Bim páso, reflex. / Bim páyi, pas.
Bite, { Kráto, tr. / Kráso, reflex. / Krávi, pas.
Cause to bite, { Krá páto, tr. / Krá páso, reflex. / Krá páyi, pas.
Kick, Tá-to, tr. Tá-so, refl. Ta-yi pas.
Cause to kick, { Tá páto, tr. / Tá páso, reflex. / Tá páyi, pas.

Strike, { Teuppo, tr. (French eu). / Teumso, reflex. / Teumyi, pas.
Cause to strike, { Teum páto, tr. / Teum páso, reflex. / Teum páyi, pas.
Scrape or Scratch (violently), { Khwáro, tr. / Khwárso, reflex. / Khwáryi, pas. / Khwárpáto, &c. c.
Scratch (for ease, itching), { Bapto, tr. / Bamso, reflex. / Bapti, pas. / Bampáto, &c. causal.
Push, Shove, { Nyapto, tr. / Nyamso, reflex. / Nyapti, pas. / Nyampáto, &c. causal.
Pull, { Syallo, tr. / Syalso, reflex. / Syalyi, pas. / Syal páto, &c. causal.
Walk, Gwakko, n.
Cause to walk, { Gwang páto, tr. / Gwang páso, reflex. / Gwáng páyi, pas.
Walk about, Take the air, { Khirso, n. / Khirsi páto, &c. c.
Run, Wanno, n. Wanpáto, &c. c.
Run away, flee, { Júkokáto, n. / Júngnikápáto, &c. c.
Creep, Búsa khwongo gwakko, n. = Snake-like walk.
Jump, hop, leap, { Próko, n. / Prong páto, &c. c.
Fly, Byéro, n. Byer páto, &c. c.
Swim, No such word.
Cross over, { Hamba glúgno, n. / Hamba glúpáto, &c. c.
Wade across, Gwaktako or Gwaksomamihamba glúgno,† n.
Sink, Wamto, n.
Drown or cause to sink, Wampáto, &c. tr.
Bathe, Chiso, n. Chisipáto-páso-páyi, c.
Cause to bathe or bathe him, { Chikto, tr. / Chikso, reflex. / Chikti, pas.
Wash, { Syappo, tr. / Syamso, reflex. / Syamyi, pas. / Syampáto, &c. c.
Dress = dress thyself, { Phiso, reflex. / Phisipáto-páso-páyi, c.

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* The causal reflex is always used to express an act voluntarily suffered by the party addressed.

† Literally, having walked issue on that side.

Cause to dress, = dress him, { Phikto, tr. / Phingso, reflex. / Phikti, pas.

Cause to cause to dress or have dressed, { Phing páto, tr. / Phing páso, reflex. / Phing páyi, pas.

Undress, { Kleuto, tr. / Kleuso, reflex. / Kleuyi, } pas.* / Kleuti, } pas.* / Kleupáto-páso-páyi, c.

Be naked, Iklaucho dyúmo, n.

Make naked, Áklaucho páwo, tr.

Cause to make naked, { Áklaucho-páto, tr. c.

Be hungry, { Sólyumi byakko, n. = hunger by die.

Make hungry, { Solyumi byáng páto, &c. tr. c.

Be thirsty, { Pwáku dwakko, n. / Pwáku dwaktimi, byakko.

Make thirsty, { Pwáku dwáng páto, &c. tr. c.

Be sleepy, Myeldo, n. Ipthi dwánglá, n.

Make sleepy, { Myel páto, tr. c. / Myel páso, reflex. c. / Myel páyi, pas. c. / Ipthi dwang páto-páso-páyi.

Be cold (to sentient being), { Júmi byakko, n. = cold by die.

Make cold (ditto), { Júmi byang páto-páso-páyi, c.

Be warm or hot, Gluglum dyúmo, n.

Make warm or heat, { Gluglum páwo-páso-páyi, tr. / Gluglum dyúm páto-páso-páyi, c. or / Gluglum thyúmto-thúmso-thúmyi, c.

Be dirty, Kékém dyúmo, n.

Make dirty, { Kékém páwo, &c. tr. / Kékém dyúmpáto, &c. or Kékém thyumto, &c.

Be clean, Búbúm dyúmo, n.

Make clean, cleanse, Búbúmpáwo or bubum dyúm páto, tr.

Cause to cleanse, { Bubum pápáto, / Bubum pápáso, / Bubum pápáyi, } double causal.

Be angry, Sokso páso, tr. reflex.

Make angry, Sokso páwo, tr.

Cause to make angry, Soksopápáto, &c. c.

Abuse, revile, Abase, Humble, Humiliate, { Khryakko, tr. / Khryangso, reflex. / Khryangyi, pas. / Khryang páto-páso-páyi, causal.

Quarrel, { Khiwo, tr. / Khiso, reflex. / ——— pas.

Cause to quarrel, { Khi páto, tr. / Khi páso, reflex. / Khi páyi, pas.

Be reconciled, Deuwo, n.

Reconcile, { Deu páto, tr. / Deu páso, reflex. / Deu páyi, pas.

Fight, { Mó-wo, tr. / Mó-so, reflex. / ——— pas.

Cause to fight, { Mó páto, tr. / Mó páso, reflex. / Mó páyi, pas.

Be victorious or win, Glwaugno, n.

Make victorious or make win, { Glwau páto, tr. / Glwau páso, reflex. / Glwau páyi, pas.

Be conquered, yield, succumb, lose, { Sheóto or Syeúto or Shyóto, n.

Cause to succumb or lose, { Syeú páto, tr. / Syeú páso, reflex. / Syeú páyi, pas.

Work, { Rú páwo, tr. / Rú páso, reflex. / Rú páyi, pas.†

Cause to work, { Rú pápáto, tr. / Rú pápáso, reflex. / Rú pápáyi, pas.

Play, Chamso, n. or reflex.

Cause to play, { Chamsi páto, tr. / Chámsi páso, reflex. / Chamsi páyi, pas.

Amuse, divert, = cause to play, { Chamto, tr. / Chamso, reflex. / Chamti, pas. / Cham páto-páso-páyi, causal.

Be tired, Bállo, n.

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* My informants say Kleuyi can only be said by the clothes, and that a man must say Kleutigi, or Kleuti, = give me undressed or undress me. So also Kleuso is objected to. Thus to Hindi Or and Pain answer Utár not Utar.

† Rupáyi, says the work, do me: rúpáti, says the man, do for me. Compare Háyu pósung and pásung. So work is rúpáwo, and work for him, rúpáto. Rú is a substantive = work.

Tire, { Bal páto, tr. / Bal páso, reflex. / Bal páyi, pas. }

Cause to tire, { Bal pápáto, / Bal pápáso, / Bal pápáyi, } double causal.

Take rest, Náso, n. or intr.

Give rest, { Nasi páto, tr. / Nasi páso, refl. / Nasi páyi, p. } causals.

Move, Dúkko, n.* Yóngso, reflex.

Cause to move or move it, { Dung páto. Dukto, tr. / Dung páso. Dungso, refl. / Dung páyi. Dukti, pas. }

Cause to move or cause it to be moved, { Dung pápáto, tr. c. / Dung pápáso, refl. c. / Dung pápáyi, pas. c. }

Remove, { Yokto, tr. / Yongso, reflex. / Yokti, pas. }

Be still, { Jáso, ac. intr.

Be firm or steady, { Má dukko.

Make still, stabilitate, or steady, { Má dukto, tr. neg. / Játo, tr. / Jáso, reflex. / Jati, pas. }

Cause to make still, or firm, { Má dung páto, c. tr. / Já páto, c. tr.

Be quick, Grukko, n.

Quicken, { Grung páto. Grukto. / Grung páso. Grungso. / Grung páyi. Grukti. }

Be slow, Wákha dyúmo, n.

Make slow, Wákha páwo, tr.

Stay, stop,† Jáso, n. ac. intr.

Stop it or stay it, Játo, tr.

Stop me, Játi.

Cause to be stopt, or cause to cause to stop, { Jápáto, tr. / Jápáso, reflex. / Já páyi, pas. }

Let him depart, { Lácho giwo, / Lá páto, } tr.

Let me depart, { Lácho giyi, / Lá páyi, } pas.

Let thyself depart, { Lácho giso, / Lá páso, } refl.

Be intoxicated, { Dukko, n. / Dukba dyumo or paso, n. }

Make intoxicated, { Dukba páwo, tr. / Dukba páso, reflex. / Dukba páyi, pas. / Dung páto-paso-páyi, c. }

Tell the truth, Áje bwakko, n.

Cause to tell truth, { Áje bwáng páto, tr. / Áje bwáng páso, reflex. / Áje bwáng páyi, pas. }

Tell falsehood, { Limo { -challo, n. / -bwakko n. }

Cause to tell, &c. { Limo bwang páto, or Limo chal páto.

Believe, Obey, { Bito, tr. / Biso, reflex. / Biti, passive. / Bipáto, &c. causal. }

Disbelieve, Disobey, { Má bito, / Má biso, / Má biti, } Negative.

Present, Offer, { Jeullo, tr. (put down, place.) / Jeulso, reflex. / Jeulyi, pas. / Jeul páto-páso-páyi, causal. }

Accept (= take), { Bláwo, tr. / Blaso, reflex. / Bláyi, pas. / Bláptáto, &c. causal. }

Refuse or forbid, { Má bláwo, Neg. / Sheomi tyakko, tr.‡ / Sheomi tyangso, reflex. / Sheomi tyangi, pas. / Sheomi tyang páto, &c. caus. }

Prevent, Restrain hinder, { Tyakko, tr. / Tyangso, reflex. / Tyangyi, pas. / Tyangpáto, &c. c. }

Cherish, { Theullo, tr. / Theulso, reflex. / Theulyi pas. / Theulpáto-paso-páyi, causal. }

Abandon, desert, { Wárdo, tr. (= throw away). / Wárso, reflex. / Wárdi, pas. / Wárpáto, &c. causal. }

Set at liberty, { Pleno, tr. / Plenso, reflex. / Plenyi, pas. / Plenpáto, &c. causal. }

Confine, imprison, { Tyákko. See Prevent.

Have, { Bwálá, n. irreg. / Thiyelá, n. reg. / Thiwo, n. reg. }

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* Dukko, if leave not place. Yóngso, if you do.

† Stay, remain, don't go, is, Bwáko = sit. ‡ Literally, hinder by mouth (word).

Cause to have or possess,
- Bwakba Thiba -páwo, tr.
- Bwakba Thiba -páso, refl.
- Bwakba Thiba -páyi, pas.
- Bwakba Thiba -pápáto, &c. c.
- Thipáto-páso-páyi.

Want,
- Má bwála.
- Má thiyela.
- Má thiwo.

Give,
- Giwo, tr. Giso, reflex.
- Gii (Giyi), pas.
- Gipáto-páso-páyi, causal.

Give back = return, Léti giwo-giso-giyi, ut supra.

Give again (more), Anaiyo giwo-giso-giyi, ut supra.

Take,
- Bláwo, tr.
- Bláso, reflex.
- Bláyi, pas.
- Blápáto-páso-páyi, causal.

Take back (see return),
- Léto, tr.
- Léso, reflex.
- Léti, pas.
- Lépáto-páso-páyi, caus.

Take again (more), Anaiyo bláwo-bláso-bláyi, ut supra.

Be saved, Bléno (blenno) (see live,) n.

Save,
- Blenpáto, tr.
- Blenpáso, reflex.
- Blenpáyi, pas.
- Blenpápáto-pápáso-pápáyi, causal.

Be well, Neuwo or Nyuwo, n.

Cure, make well,
- Neupáto. Neuto, tr.
- Neupáso. Neuso, reflex.
- Neupáyi. Neuti, pas.
- Neupápáto-pápáso-pápáyi, c. of neuter.
- Neupáto-páso-páyi, c. of tr.

Spoil, destroy, mar,
- Khlamto, tr.
- Khlamso, reflex.
- Khlamti, pas.
- Khlam páto-páso-páyi, c.
- Khlam pápáto. Double c.

Be handsome,
- Rimmo, n.
- Rimba dyúmo, com. gender.
- Rimsókpa dyúmo, mas.
- Rimsóngma dyúmo, fœm.

Make handsome, adorn,
- Rim páto, tr.
- Rimba páwo, com. gender.
- Rimsókpa páwo, mas.
- Rimsongma páwo, fœm.

Be mature, adult,
- Swálocha dyúmo, mas.
- Swálomi dyúmo, fœm. (no neuter).

Make mature, or adult,
- Swálocha páwo, m.
- Swálomi páwo, f.*

Be strong,
- Sokticha dyúmo, m.
- Soktimicha dyúmo, f. (no neuter).

Make strong, Strengthen,
- Sokticha páwo, m.
- Soktimicha páwo, f.

Grow, Báro, n.

Grow it or cause to grow,
- Bár páto, tr.
- Bár páso, reflex.
- Bár páyi, pas.
- Bár pápáto-pápáso-pápáyi, double caus.

Decay, Syówo or Sheówo, n.

Decay it, Make decay,
- Syó páto, tr.
- Syó páso, reflex.
- Syó páyi, pas.
- Syó pápáto, &c. causal.

Steal, Rob,
- Kúwo, tr.
- Kúso, reflex.
- Kúyi, pas.
- Kúpáto, &c. c.
- Kúpápáto, double c.

Murder, Sáto (see kill),

Deceive, Cheat,
- Hanto, tr.
- Hanso, reflex.
- Hanti, pas.
- Hanpáto, causal.

Accompany (Nung needs a noun or pronoun),
- Nung láwo, n.
- Kwángkho láwo, n.

Cause to accompany, Kwángkho lápáto-páso-páyi, tr. c.

Leave, quit,
- Wáto, tr.
- Wáso, reflex.
- Wáyi, pas.
- Wápáto, &c. causal.

Remain with, Kwángkho bwakko, n.

Cause to remain with, Kwángkho bwápáto, causal.

Sit, Niso, n. compare with the next.

Seat or set down,
- Nito, tr.
- Nisipáto, c.

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* Compare Newári lyá-hma jn, and lyáse ju; lyá-hma juye-ki or yá, and lyáse juyeki or yá. Also Háyu Bang-cho dum. Bang-mi dum; Bang-cho páko or thumto and Bangmi thumto or pako. The Báhing verbs dyumo and páwo have the usual characteristics, given often afore. Rimo is a primitive neuter, whose causal is rimpáto.

Seat, { Nito, tr. / Niso, reflex. / Niti, pas. / Nipáto, causal. / Nipápáto, double causal.
Stand, Rápo, n.
Make stand, Rámpáto, c.
Remain standing, { Rapsógno bwakko, n. / Rápó mokho bwakko, n.
Keep him standing, { Rám páto mokho bwákko.* / Rápsógno bwápáto.
Be erect, { Bwóko or Bokko, n. (to recumbent). / Rápó (to sitter).
Stoop, Khúmo, n.
Make stoop, Khúm páto, &c. c.
Lie down, Glésо, n.
Lay down, Glésipáto-páso-páyi, c.
Get up (to a sitter), Rápo, n. (see stand).
Get up (to a recumbent), { Bwóko, n. (see be erect).
Make get up, Bwong páto. Rám páto.
Fall (being), Doko, n.
Cause to fall, Dóng páto-páso-páyi, c.
Slip down, Slide down, { Bhlúwo, n.
Cause to slip or slide, { Bhlúpáto-páso-páyi, c.
Get on, mount, Wógno, n.
Cause to mount, Wópáto-páso-páyi, c.
Dismount, Yúwo, n.
Cause to dismount, Yúpáto-páso-páyi, c.
Put, place, put down, deposit, { Jyúto, tr. / Jyúlso, reflex. / Jyúlyi, pas. / Jyúlpáto, causal. / Jyúlpápáto, d. c.
Take up, Lift, raise, { Bokto. Guppo, tr. / Bongso. Gumso, reflex. / Bokti. Gumyi, pas.
Cause to take up, { Bong páto, &c. / Gum páto, &c } c.
Throw, { Grepto, tr. / Grepso, reflex. / Grepti, pas. / Grem pato, &c. c.
Catch as thrown, { Dáto, tr. / Dáso, reflex. / Dáti, pas. / Dápáto, &c. causal.

Keep, Jyullo, tr. (see place).
Snatch away, { Réto, tr. / Réso, reflex. / Réti, pas. / Ré páto, &c. c.
Throw away, Squander, { Wárdo, tr. / (see Abandon).
Be near, Nentha dyúmo, n.
Approximate, Nentha dyúmpáto, tr.
Be distant, Brábá dyúmo. Bráwo, n.
Distance, { Brápáto, &c. tr. / Brába dyumpáto, c. tr.
Bring (see come. piwo: pito is trans. or caus. =make come), { Pito. tr. / Piso, reflex. / Piyi, pas. / Pipáto, &c. causal.
Bring down (see Yúwo = come down), { Yúto, tr. / Yúso, reflex. / Yúti, pas. / Yúpáto, &c. c.
Bring up (see Kúwo = come up), { Kúto, tr. / Kúso, reflex. / Kúti, pas. / Kúpáto, &c. c.
Fetch, Bláthа diwo, n. (to take go.)
Cause to fetch, { Bláthа dipáto-páso-páyi, tr. c.
Take away, { Láto, tr. / Láso, reflex. / Láyi, pas. / Lápáto, causal.
Send, { Phli-gno, tr. / Phli-so, reflex. / Phli-yi, pas. / Phli-páto, &c. causal.
Carry, bear, { Kúro, tr. / Kúrso, reflex. / Kúryi, pas. / Kúrpáto, &c. c.
Hold, take in hand, grasp, { Siwo, tr. / Siso, reflex. / Siyi, pas. / Sipáto, &c. causal.
Hold up, Support, { Játo, tr. / Jáso,† reflex. / Játi, pas. / Jápáto, &c. c.
Let it fall, Ucho giwo.
Fall (thing), Uto, n. and a.
Make fall or fell, Upáto, c. and Uto, tr.
Enter, Wógno, n.

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* In conjugation, this compound verb preserves the trans. of rampáto and the neuter of bwakko blended in one conjugation. See grammar.

† Jáso gives Jáse, it is (self) supported, and Jáso or Japaso must be used for "Be supported," though there be a passive formed from Jati = support me. All this results from the imperfect development of the passive voice which has no imperative of the 2nd person.

Cause to enter, Admit, insert, } Wópáto, c. Wondo, tr.
Issue, Gúgno, n.
Cause to issue, Glúpáto. Glúndo.
Ascend = climb tree, Wógno, n.
Ascend = come up, slope, Kúwo, } n.
Ascend = go up, slope, Hátru láwo, }
Descend = come down, Yúwo, n.
Descend = go down, Háyu láwo, n.
Descend = climb down tree, Glúgno, n.
Arrive, { Jwakdiwo, Jwákpiwo, Jwakko, n.* } n. there, here.
Cause to arrive, { Jwángdipáto, Jwángpipáto, Jwángpáto, } tr.
Depart, Glúgno (issue).
Cause to depart, Glúpáto, &c.
Precede, Gnalla yóngso, intr.
Cause to precede, Gnalla yongpáto or yokto, reflex.
Follow, Nótha yóngso, intr.
Cause to follow, { Nótha yongpáto, ref. Nóthá yokto, c.
Attend on, Kwongkho bwakko, n.
Disappear, Khleuso, reflex. (see hide).
Cause to disappear, { Khleuto, tr. Khleuti, pas.
Appear, Kwainso páso, reflex.
Make appear, Kwainso páwo, tr.
Make me appear, Kwainso páyi, pas.
Be lost, lose, Shéoto, n. and a.
Cause to lose, lose it, Shéopáto-páso-páyi, c.
Search, { Lamo, tr. Lamso, reflex. Lamyi, pas.
Cause to search, { Lam páto, tr. Lam páso, reflex. Lam páyi, pas.
Find, { Táwo, tr. Táso, reflex. Táyi, pas.
Cause to find, { Tá páto, tr. Tá páso, reflex. Tá páyi, pas.
Begin, Prénso, n.
Cause to begin, { Prénsi páto, tr. Prénsi páso, reflex. Prénsi páyi, pas.
End, Be ended, } Ryipo, n. Ryim páto, &c. tr.
End it, Cause to be ended, or finish, { Theumo, tr. Theumso, reflex. Theumyi, pas. Theum páto, &c. causal.
Come, Piwo, n. Ráwo, n.
Cause to come, { Pipáto. Rápato, tr. Pipáso. Rápáso, reflex. Pipáyi. Rápáyi, pas. Pipápáto. Rápápáto, d. c.
Go, Diwo,† n. Lawo, n.
Cause to go, { Lápáto. Dipáto, tr. Lápáso. Dipáso, refl. Lápáyi. Dipáyi, pas.
Continue, Bwakko, n. (sit).
Cause to continue, { Bwápáto, tr. Bwápáso, reflex. Bwápáyi, pas.
Get out of the way, { Yongso, n. Lam plénno, tr.
Cause to clear the way or make get out of the way, { Yokto, tr. Lamplénpáto, tr. Yongso, reflex. Lamplénpáso, reflex. Yokti, pas. Lamplénpáyi, pas.
Wait, Bwakko, n. (sit).
Cause to wait, Bwángpáto-páso-páyi.
Wait for, Expect, { Rimdo, tr. Rimso, reflex. Rimdi, pas. Rimpáto, &c. c.
Arrive { here, there, { Jwak diwo, n. Jwak piwo, n.
Cause to arrive, { Jwak dipáto, &c. Jwak pipáto, &c.
Depart, { Glugno, n. (issue). Láwo, n. (go).
Cause to depart or dismiss, { Glúpáto, &c. c. Lápáto, &c. c.
Return, Léto, n. } See take back.
Cause to return, Lépáto, &c. }
Be high, grow, Báro, n.
Make high, or grow it, { Bár-páto-páso páyi, c.
Be large, big, Gnólo dyúmo, n.
Make big or enlarge, Gnólo thyumto or dyúmpáto, &c. c.
Be fat, Syéneúwo,‡ n.

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* Jwakko = arrive simple. The adjuncts tell whether by going (diwo) or by coming (piwo).

† See "take away" láto, = cause to go but not used so.

† Syé = flesh: neuba = good: neuwo = be good, whence neugua, I am good.

Fatten, Syéneúpáto, &c. c.
Be thin, Ryammo, n.
Make thin, Ryampáto, &c. c.
Increase, Báro, n.
Cause to increase, Bár páto, &c. c.
Decrease, Syó-wo, n.
Cause to decrease, Syó páto, &c. c.
Be good, Neuwo, n.
Make good, Neuto, tr. / Neuso, reflex. / Neuti, pas. / Neú páto, &c. c.
Be bad, Má neuwo, neg.
Make bad, Má neuto, &c. c. n.
Add to or Augment, Gapto, tr. / Gapso, reflex. / Gapti, pas. / Gapáto, &c. causal.
Deduct from or lessen, Syó páto, tr. (decrease).
Cultivate (earth), Chó-gno, tr. / Chó-so, reflex. / Chóyi, pas. / Chópáto, &c. c.
Dig, Kóko (kokko), tr. def. / Kóngso, (?) refl. indef. / Kóngyi.* pas. / Kóng páto, &c. c.
Plough, Jóto, tr. / Jóso, reflex. / Jóti, pas. / Jópáto, &c. c.
Sow, Phúto, tr. / Phúso, reflex. / Phúyi,† passive. / Phú páto, &c. c.
Transplant, Khleumo, tr. / Khleumso, reflex. / Khleumyi, passive. / Khleum páto, &c. causal.
Reap, Riko (rikko), tr. / Ringso, reflex. / Ringyi, pas. / Ring páto, &c. causal.

Gather, pluck flowers greens, Náto, tr. Préto, tr. / Náso, reflex. Préso, reflex. / Náyi, pas. Préyi, p. / Nápáto, &c. c. Prépáto, &c. c.
Eradicate, Ruko, tr. / Rungso, reflex. / Rungyi, pas. / Rungpáto, &c. causal.
Fall, Be felled, U'to, n. and tr.
Fell it, U'to, tr. / U'yi, pas.
Cause to fell, Upáto, tr. / Upáso, reflex. / Upáyi, pas.
Breed cattle, Theúlo, tr. / Theúlso, reflex. / Theúlyi, pas. / Theúlpáto, &c. causal.
Slaughter cattle, Chwáro, tr. (cut). / Chwárso, reflex. / Chwáryi, pas. / Chwárpáto, &c. caus.
Graze, Chári páwo, tr. / Chári páso, reflex. / Chári páyi, pas. / Chári pápáto, causal.
Flay or decorticate or peel, Wókko, tr. / Wóngso, reflex. / Wóngyi, pas.‡ / Wóngpáto, causal.
Shear, Krito, tr. / Kriso, reflex. / Kriti, pas. / Kripáto, &c. c.
Shave, Khwáro, tr. / Khwárso, reflex. / Khwáryi, pas. / Khwárpáto, c.
Buy, Jyappo, tr. / Jyamso, reflex. / Jyamyi, pas. / Jyampáto &c., causal.

* Kongyi, says field, dig me. Dig for me is koktigí, and dig for him koktigíwo.

† The reflex and passive forms of the verbs to dig, to plough, to sow and all such are eschewed, because incapable of application by or to a human being and the constructio ad sensum still overruling any feeling of grammatical uniformity with my unsophisticated informants. The transitive and reflex forms of such verbs often tally with Hungarian definite and indefinite.

‡ Wongyi, says the skin, and Wongso, says man to skin, Wokti or Woktigí, says one man to another, strip off my skin. So also of "shear," &c.

Sell, { Légno, tr. / Léso, reflex. / Leyi, pas. / Lépáto, c.

Change or Exchange, { Pháto, tr. / Pháso, reflex. / Pháyi, pas. / Phápáto, c.

Lend, { Jyár giwo, tr. / Jyár giso, reflex. / Jyár giyi, pas. / Jyár gipáto, &c. c.

Borrow, { Jyár bláwo, tr. / Jyár bláso, reflex. / Jyár bláyi, pas. / Jyár blápáto, c.

Pay debt, { Chó-gno, tr. / Chó-so, reflex. / Chó-yi, pas. / Chó-páto, c.

Count, { Hikko, tr. / Hingso, reflex. / Hingyi, pas. / Hing páto, &c. c.

Measure or weight, { Thápo, tr. / Thámso, reflex. / Thámyi, pas. / Thám páto, &c. c.

Plaster (wall), { Khlyakko, tr. / Khlangso, reflex. / Khlangyi, pas. / Khlang páto, &c. c.

Make house, Khim páwo (see make).

Make clothes, Wá páwo (see make).

Spin, { Sále panno, tr. / Sále panso, reflex. / Sále panyi, pas. / Sále panpáto, &c. c.

Weave, Wá páwo (supra).

Sew, { Phyéro, tr. / Phyérso, reflex. / Phyéryi, pas. / Phyérpáto, &c. c.

Grind, { Khri-to, tr. / Khriso, reflex. / Khriyi, pas. / Khripáto, &c. c.

Work mine, Khání kokko (dig).

Work iron, Syal teuppo (beat).

Work wood, { Singchokko, tr. (plane). / Singchongso, reflex. / Singchongyi, pas. / Singchongpáto, &c. c.

Work clay, { Khápi lwákto, tr. (knead). / Khápi lwángso, reflex. / Khápi lwákti, pas. / Khápi lwángpáto, &c. c.

Cook, { Kiwo, tr. / Kiso, reflex. / Kiyi, pas. / Kipáto, &c. c.

Be cooked, be prepared (rice), } Ming-gno. n.

Cause to be cooked, { Ming páto, &c. c.

Be ripe (fruit), Jiwo, n.

Ripen, Jipáto, &c. c.

Boil, Kiwo, (cook).

Roast, { Grémdo, tr. / Grémso, reflex. / Grémdi, pas. / Grémpáto, c.

Grill, { Cheowo, tr. / Cheoso, reflex. / Cheoyi, pas. / Cheo páto, &c. c.

Cut with knife by one blow, } Chwáro (slaughter).

Cut with scissors, Krito (shear).

Cut by frequent drawing, or saw, { Séwo, tr. / Séso, reflex. / Séyi, pas. / Sepáto, &c. c.

Perforate or pierce, { Hóto, tr. / Hóso, reflex. / Hóyi, pas. / Hópáto, &c. c.

Be torn, Jito, n.

Tear, { Chito, tr. / Chiso, reflex. / Chiyi, pas. / Chipáto, &c. c.

Be split, Yéso, reflex.

Split, { Yéto, tr. / Yéyi, pas. / Yépáto, &c. c.

Be broken, Jingso, reflex.

Break, { Jikko, tr. and n. / Jingso, reflex. / Jingyi, pas. / Jingpáto, &c. c.

Be burst, Bukko, n.

Burst it, { Pwákko or Pukko, tr. / Pwangso, reflex. / Pwangyi, pas. / Pwangpáto, &c. c.

Brew, { Kiwo, tr. (cook). / Kiso, reflex. / Kiyi, pas. / Kipáto, &c. causal.

Distil, { Héto, tr. / Héso, reflex. / Héyi, pas. / Hépáto, &c. c.

Filtrate, Defecate, { Phyakto, tr. / Thyangso, reflex. / Thyangyi, pas. / Thyangpáto, &c. c.
Be sharp, Syamso, reflex.
Sharpen, { Syappo, tr. / Syamso, reflex. / Syamyi, pas. / Syampáto, &c. c.
Be blunt, Khlamso, reflex.
Make blunt (or spoil), { Khlamto, tr. / Khlamso, reflex. / Khlamti, pas. / Khlampáto, &c. c.
Be shaken, Dungso, reflex. Dukko, n.
Shake, { Dukto, tr. / Dungso, reflex. / Dukti, pas. / Dungpáto, &c. c.
Be still, Be firm, } Jáso, reflex.
Make still, Make firm. { Játo, tr. / Játi, pas. / Jápáto, &c. c.
Be contained, Ringso, reflex.
Contain, Hold, { Rikto, tr. / Ringso, reflex. / Rikti, pas. / Ringpáto, &c. c.
Be sustained, Jáso (see Be firm).
Sustain, Játo (see Make firm).
Be retained, Tyangso, reflex.
Retain, Keep in, { Tyakko, tr. / Tyangso, reflex. / Tyangyi, pas. / Tyangpáto, &c. c.
Ooze out, Chappo, n.
Make ooze out, { Cham páto, tr. / Cham páso, reflex. / Cham páyi, pas. / Cham pápáto, c.
Be full (belly), Rú-gno, n.
Fill (belly), { Rú páto, tr. / Rú páso, reflex. / Rú páyi, pas. / Rú pápáto, &c. c.
Be full (vessel), Dyammo, n.
Fill (vessel), { Dyam páto, tr. / Dyam páso, reflex. / Dyam páyi, pas. / Dyam pápáto, c.
Be empty, Asyéti dyúmo, n.
Empty, { Asyéti páwo, tr. / Asyéti páso, reflex. / Asyéti páyi, pas. / Asyéti pápáto, &c. c.
Shine, Chyáro, n.
Cause to shine, Chyarpáto-páso-páyi, c.

Be dark, Namrikko, n.
Darken, { Namring páto, tr. / Namring páso, reflex. / Namring páyi, pas. / Namring pápáto, &c. c.
Be luminous, Hauhau dyúmo, n.
Make luminous, Hauhau páwo, tr.
Blow as wind, Khito, n. Byéro, n. (fly).
Cause to blow, { Byér páto, &c. c. / Khi páto, &c. c.
Flow as water, Gwákko (go)
Cause to flow, Gwang páto, &c. c.
Flower, Bóto, n.
Cause to flower, Bópáto, &c. c.
Fruit, Sito, n
Cause to fruit, Si-páto, &c. c.
Be ripe (fruit only), Jiwo, n.
Ripen, Jipáto, &c. c.
Be ripe as grain, &c., Ming-gno, n.
Ripen, Ming páto, &c. c.
Be hot, Glé-wo, n.
Heat, Glépáto, &c. c.
Be cold (thing only), Chhikko, n.
Make cold, Chhing páto, &c. c.
Be rotten, Jippo, n.
Make rotten, Jimpáto, &c. c.
Be raw, Achekhli dyúmo, n.
Make raw, Achekhli páwo, tr.
Be lighted (lamp), Hówo, n.
Light (lamp), { Hópáto, tr. / Hópáso, reflex. / Hopáyi, pas. / Hópápáto, c.
Be kindled (fire), Khryamso, reflex.
Kindle (fire), { Khryapto, tr. / Khryamso, reflex. / Khryamti, pas. / Khryam páto, c.
Be burnt (destroyed by fire), Deuppo, n.
Burn it, { Deum páto, tr. / Deum páso, reflex. / Deum páyi, pas. / Deum pápáto, c.
Burn (corpse), { Chwé-wo, tr. / Chwé-so, reflex. / Chwé-yi, pas. / Chwé-páto, &c. c.
Be buried (= bury thyself), Thimso, r.
Bury it, { Thimmo, tr. / Thimso, reflex. / Thimyi, pas. / Thimpáto, &c. c.
Be melted (= melt thyself), Yóngso, r.
Melt it, { Yóng páto, tr. / Yóng páso, reflex. / Yóng páyi, pas. / Yóng pápáto, &c. c.
Be congealed, Jámidyúmo, n.

Congeal it, Jámi páwo, tr.

Collect, bring or put together,
- Khuppo, tr.
- Khumso, reflex.
- Khumyi, pas.
- Khum páto, &c. c.

Be collected, Khumso, supra,

Spread,
- Hammo, tr.
- Hamso, reflex.
- Hamyi, pas.
- Hámpáto, &c. c.

Share out, Apportion,
- Yokko, tr.
- Yongso, reflex.
- Yongyi, pas.
- Yong páto, &c. c.

Separate, Set apart without division,
- Phwakko, tr.
- Phwangso, reflex.
- Phwángyi, pas.
- Phwang páto, &c. c.

Set together, Khuppo (see Collect).

Divide (by cutting, &c. what whole),
- Chyakko, tr.
- Chyangso, reflex.
- Chyangyi, pas.
- Chyangpáto, &c. c.

Unite, join, what divided or broken,
- Khryapto, tr.
- Khryamso, reflex.
- Khryamyi, pas.
- Khryam páto, c.

Knot it, Join by knot,
- Sapto, tr.
- Samso, reflex.
- Sapti, pas.
- Sampáto, &c. c.

Unknot, Loosen, Unseam, Unfold,
- Prwákko, tr.
- Prwángso, reflex.
- Prwángyi, pas.
- Prwáng páto, c.

Scatter,
- Brá-wo, tr.
- Bra-so, reflex.
- Bráyi, pas.
- Brápáto, &c. c.
- Brápápáto, d. c.

Mix,
- Húl-do, tr. Húl-so, reflex.
- Húl-di, pas.
- Húl-páto, &c. c.

Unmix. Separate what mixed,
- Phwakko.
- (See Separate.)

Acquire, gain by labour or earn,
- Grókso páwo, tr.
- Grókso páso, refl.
- Grókso páyi, pas.
- Grókso pápáto, c.

Save, (what earned, (see collect),
- Blenpáto. Khuppo, tr.
- Blenpáso. Khumso, refl.
- Blenpáyi. Khumyi, pas.
- Bleupápáto. Khumpáto, c.

Squander,
- Wárdo, tr.
- Wárso, reflex.
- Wárdi, pas.
- Wárpáto, c.
- Wárpápáto, d. c.

Fold,
- Plepto, tr.
- Plemso, reflex.
- Plepti, pas.
- Plempáto, &c. c.

Unfold,
- Prwakko, tr.
- Prwangso, reflex.
- Prwangyi, pas.
- Prwang páto, &c. c.

Open,
- Hókko, tr.
- Hongso, reflex.
- Hóngyi, pas.
- Hóng páto, &c. c.

Shut,
- Tyákko, tr.
- Tyángso, reflex.
- Tyángyi, pas.
- Tyáng páto, c.

Press, Squeeze, Depress,
- Timto, tr.
- Timso, reflex.
- Timti, pas.
- Timpáto, c.
- Timpápáto, d. c.

Compress or Express,
- Nippo, tr.
- Nimso, reflex.
- Nimyi, pas.
- Nimpáto, &c. c.

Turn over carefully,
- Lipto, tr.
- Limso, reflex.
- Lipti, pas.
- Limpáto, &c. c.

Turn topsy turvy, Húldo, tr. (mix).

Roll up,
- Tyallo, tr.
- Tyalso, reflex.
- Tyalyi, pas.
- Tyal páto, &c. c.

Unroll,
- Prwakko, tr. (see unfold).
- Prwangso, reflex.
- Prwangyi, pas.
- Prwang páto, &c. c.

Be loose, slack, Thyelvimdyúmo, n.

Loosen, slacken,
- Thyelvim páwo, tr.
- Thyelvim páso, refl.
- Thyelvim páyi, pas.
- Thyelvim pápáto, c.

Be tight, Muske dyúmo, n.

Tighten, Muske páwo, tr.

Bind,
- Chúkko, tr.
- Chúngso, reflex.
- Chúngyi, pas.
- Chúng páto, &c. c.

Unbind,
- Prokko, tr.
- Prongso, reflex.
- Prongyi, pas.
- Prong páto, c.

Pack,
- Kúra páwo, tr.
- Kúra páso, reflex.
- Kúra páyi, pas.
- Kúra pápáto, c.

Unpack, Prwákko (see unrol).

Climb or get up, tree. &c. { Wógno, n. / Wópáto.
Come down, Yúwo. n.
Put on (fire), { Kwádo, tr. / Kwáso, reflex. / Kwádi, pas.
Take off (fire), { Nito, tr. / Niso, reflex. / Niti, pas.
Put in (solid). { Piko, tr. Wondo. / Pingso. r. Wonso. / Pingyi. p. Wonyi. / Pingpáto, &c. Wonpáto. } See Wogno, get in.
Pull out, Take out, { Gleúndo, tr. / Gleúnso, refl. / Gleúndi, pas. / Gleúnpáto, &c. c. } See issue, Glugno.
Pour in (liquid), Piko (supra).
Catch as poured, { Dáto, tr. / Dáso, reflex. / Dáti, pas. / Dápáto, &c. c.
Take down or Bring down, { Yuto, tr. / Yúso, reflex. / Yúyi, pas. / Yúpáto, &c. c. } See Yuwo, come down.
Put up above, { Lwakto, tr. / Lwangso, reflex. / Lwakti, pas. / Lwangpáto, &c. c.
Bring up, { Kúto, tr. / Kúso, reflex. / Kúyi, pas. / Kúpáto, tr. c. } See Kuwo, come up.
Stop, stay (to going man), { Jáso (reflect. or intrans.)
Stop him, stay him, Játo, tr.
Stay or stop me, Játi, pas.
Cause him to stop, stay, { Jápáto-páso-páyi, c.
Stay, stop, one who flees, or a road, { Tyákko, tr. / Tyángso, reflex. / Tyángyi, pas. / Tyáng páto, &c. c.
Prevent, hinder, forbid, { Tyákko, supra.
Let go, Lácho giwo.
Enable to go, { Láne chapba páwo, tr. / Láne chapba páso, refl. / Láne chapba páyi, pas. / Láne chapba pápáto, &c. d. c.
Rub, { Yállo, tr. / Yálso, reflex. / Yályi, pas. / Yálpáto, c.

Polish, { Phélephéle páwo, tr. / Phélephéle páso, reflex. / Phélephéle páyi, pas.
Be polished, Phélephéle dyúmo, n.
Cause to be polished, { Phélephéle dyúmpáto-páso-páyi, c.
Cover, { Sheumo, tr. / Sheumso, reflex. / Sheumyi, pas. / Sheum páto, &c. c.
Uncover, { Hoko, tr. / Hóngso, reflex. / Hongyi, pas. / Hongpáto, &c. c.
Shoot, { Appo, tr. / Amso, reflex. / Amyi, pas. / Ampáto, &c c.
Wring, Twist neck, cloth, &c. { Chyúrdo, tr. / Chyúrso, reflex. / Chyúrdi, pas. / Chyúrpáto, &c. c.
Twist or make rope, { Chéwo, tr. / Chéso, reflex. / Chéyi, pas. / Chépáto, c.
Be like, resemble, Deu-wo, n.
Make like, Deu páto páso-páyi, c.
Be white or clear, Bubum dyúmo, n.
Make white or clean; whiten and cleanse, { Bubum páwo, tr. / Bubum páso, reflex. / Bubum páyi, pas. / Bubum pápáto, d. c.
Be wet, Jiso, reflex.
Wet it, Make wet, { Jito, tr. / Jiso, reflex. / Jiti, pas. / Jipáto, &c. c.
Be dry, Syeu-wo, n.
Make dry, Syeu-páto-páso-páyi, c.
Dry in sun, { Bláto, tr. / Bláso, reflex. / Bláti, pas.
Dry at fire, { Gramdo, tr. / Gramso, reflex. / Gramdi, pas. / Grampáto, &c. c.
Be flavoursome, Brógno, n.
Make flavoursome or flavour it, { Brópáto, tr. / Brópáso, reflex. / Brópáyi, pas.
Be sweet, Jijim dyúmo, n.
Make sweet, { Jijim dyúmpáto, tr. c. / Jijim páwo, tr.
Be sour, Phokko, n.
Make sour, Phong páto-páso-páyi, c.
Be bitter, Káwo, n.
Make bitter, Kápáto-páso-páyi, c.

Be knotted, Khingso, reflex.

Knot it, Make knotted, { Khikto, tr. / Khingso, reflex. / Khikti, pas. / Khingpáto, &c. c.

Be great, Gnólo dyúmo, n.
Make great, Gnólo páwo, tr.
Be small, Yáke or Kachim dyúmo, n.
Make small, Yáke or Kachim páwo, tr.
Be heavy, Hyallo, n. Hyalba dyúmo, n.
Make heavy. Hyalpáto, tr.
Be light, (levis), { Hammo, n. / Hamba dyúmo, n.
Make light, Hampáto, tr. Hampápáto, c.
Be hard. Tingko dyúmo, n.
Harden, Tingko páwo, tr.
Be soft, Lobo dyúmo, n.
Soften, Lobo páwo, tr.
Be straight, Dyámo, n.
Straighten, Dyampáto-páso-páyi, c.
Be crooked, Gúko, n.

Crook it, { Kúko, tr. / Kúngso, reflex. / Kúngyi, pas. / Kúng páto, &c. c.

Be rich = have, { Khiwo or Khiba dyúmo, Bwála, } n.

Enrich = make have, { Thipáto, &c. c. / Thiba dyampáto-páso-páyi, c. / Bwálapáto.

Be poor, { Má thiwo. / Má thiba dyúmo. / Má bwála.

Impoverish, { Má thiba páwo. / Má thi páto. / Má bwála páto.

Adverbs and Prepositions Compared.

Come, Piwo.
Come in (into the house), { Khyimá gwáre piwo or wógno.
Come out (of the house), { Khyimátola piwo or Glúgno.
Come back, to rear, Nótha piwo.
Come on, to front, Gnálla piwo.
Come up, Yákhateu piwo or Kúwo.
Come down, Yákhayeu piwo or Lúwo.
Come back = return, { Létoko piwo, or Léto.
Come again (repeating), { Anaiyo or Ana-piwo.
Come once, Kwá bálá piwo.
Come twice, Nip pálá piwo.
Come thrice, Sap pálá piwo.
Come four times, Lep pálá piwo.
Come five times, Gnó pálá piwo.
Come six times, Rú pálá piwo.
Come seven times, Chá pálá piwo.
Come eight times, Yá pálá piwo.
Come nine times, Ghú pálá piwo.
Come ten times, Kwaddyum pálá piwo.
Come together, (place), { Kwádo pine or ráne, (verbs in plural).
Come at once, (time), { Kwá bala pine, (pine is plural).
Come near, Nentha piwo.
Come close to him, Wáke púmdi piwo.
Come apart, Hare piwo.
Come far away, Brába piwo.
Come with, Kwongkho piwo.
Come with me, Gó nung piwo.
Come alone, Giche piwo.

Come without me, thee, him, { Go manthi piwo. / Ga manthi piwo. / Harem manthi piwo.

Come towards me, thee, him, { Wáke lá piwo. / Ike lá píwo. / Ake lá piwo.

Come as far as this or here, that or there, { Eke sambh piwo. / Meke sambh piwo.

Come quickly, instantly, Bácheu piwo.
Come slowly, Wákha piwo.
Come by and by, } Ghyárkwángmi piwo.
Come silently, Liba piwo.
Come noisily, { Bréso or Bresomami or Brésoko*—piwo.
Come early, Bácheu piwo.
Come late, Wákha piwo.
Come at sun-rise, Namdhamna* piwo.
Come at sun-set, Nam wamtana* piwo.
Come loiteringly, { Wakhawákha gwakkoko* piwo.
Come over (by top), Khwátoko* piwo.

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* These and all similars are imperatival gerunds. See verbs. When the expression is imperative the gerund sign is affixed to the imperative form of the verb; when it is indicative, to the indicative form. Come loiteringly is having loitered, come. This is one of the many affinities with the Dravirian tongues.

Come under by, beneath, { Háyu lang glúgnoko* / piwo.
Come through (by middle), { Ákam láng / piwo.
Come between, Álimbu láng piwo.
Come across, { Glúgnoko piwo. / Glúso piwo
Come to this / to that side, { Yése hamba / Háre hamba } piwo.
Come constantly, Pisogno bwakko.
Come sometimes, Káyikáyi piwo.
Come ever, Sadai { ráwo. / piwo.
Come never, Gyanaiyo má piwo.
Never come again, Gyanaiyo ána má piwo.
Come to, at, this side, Yékhola piwo.
Come by this side, Yékholáng piwo.
Come to, at, that side, Mékholá piwo.
Come by that side, Mékholáng piwo.
Come on the right, Jumrola piwo.
Come by the right, Jumroláng piwo.
Come on the left, Pérola piwo.
Come by the left, Péroláng piwo.
Come to the east, Namdhapdi kháiá piwo.
Come from the west, { Nam wamdikhaláng / piwo.
Come towards the house, Khyimlá piwo.
Come from towards the house, { Khyim láng / piwo.
Go towards the plains { Dhepdelá láwo / or diwo.
Go as far as Nepal, Népál sambh láwo.
Give a little, Akachi giwo.
Give much, Eko giwo.
Give secretly, Khleuso giwo.
Give openly, Kwainso páso giwo.
Give gladly, Gyarscho giwo.
Give sulkily, Má gyarscho giwo.
Give to-day, Ána giwo.
Give to-morrow, Dilla giwo.
He gave yesterday, Sanamti gipta.

Give mutually, Gi mose.†
Hit mutually, Tyeum mose.
Kiss mutually, Leú mose.
Kill mutually, Sá mose.
Give continually, Giso gno bwakko.
Hit continually, Teupsogno bwakko.
Sleep continually, Ipsogno-bwakko.
Strike forcibly, Soktimi teuppo.
Strike gently, Wákha teuppo.
A house, Khyim.
Of a house, Khyim ke. Khyim dim.
To a house, a house, { Khyim (no signs.)
In a house, Khyim di.
From a house, Khyim ding.
By (inst.) house, Khyim mi.
Into (inside) house, Khyimá gwáre.
Out of (outside) house, Khyimá tola.
As far as house, Khyim sambh.
Towards or at the house, Khyim lá.
From vicinity of house, Khyim láng.
Before the house, in front, } Khyim á gualla.
Behind the house, in rear of, } Khyim á notha.
On the house (touching), { Khyim a tauredi.
Above the house (remote), { Khyim ding hatyu.
Under, Beneath { the house (close), { Khyim / háyu.
Below the house (apart), { Khyim ding háyu.
From under house, { Khyim ke háyu láng or / hayu ding.
In the under of house, { Khyim ke háyu { la. / di ‡
In the above of house, { Khyim á taure di or / lá.
Near the house, § { Khyim ke nentha or / Khyim nentha.

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* These and all similars are imperatival gerunds. See verbs. When the expression is imperative the gerund sign is affixed to the imperative form of the verb: when it is indicative, to the indicative form. Come loiteringly is having loitered, come. This is one of the many affinities with the Dravirian tongues.

† Mose dual of mowo, which apart = fight: in composition of several verbs = do, make.

‡ Lá expresses vicinity. Khyim la, near, towards, at, the house: whence la-m of vicinity and la-ng, from vicinity. So Di expresses inness, khyim di, in the house: whence di-m, of in and di-ng from in. M final is attributive. See adjectives and participles e. g. piba-me, I who come, I the comer, and kwágná me, the other one, and lala-m, red.

§ Khyim nentha = the house is near and near the house, but the latter is better with genitive sign: so also of khyim pumdi. Khyim á pumdi, the house its side in, also prevents the equivoque and is the true form for near the house. Nentha having lost its sense as a noun cannot take the á. Nouns of place, however, take dim rather than á, as Khyim dim pumdi, literally, house in of side in.

Far from house, } Khyim ding brába.
At the house, { Khyim á pumdi. / Khyim nentha.
On account of house, Khyim dáso.

In lieu of house, or In exchange for house, } Khyim á phle.
Through the house, Khyim á limbu láng.
Beyond the house, { Khyim á gnalla. = house its beyond.

Báhing Prepositions.

At this time, Yekhonadi.
At that time, Myekhonadi.
At this place, Yekedi.
At that place, Myekedi.
In this year, Yem tho'di.
In that year, Myem tho'di.
In a little while, Ghyer Kwongmidi.
During, pending this year, { Yem thomálá theum. / Yem —— thobwáná.
Pending his coming, Haremma pi thim.
At home, Khyim di.
In, within, the house, Khyim gwáre.
In the wilderness, Sabala di.
In my hand, Wá gu di.
In, at, Dorjiling, Dorjiling di.
Go into the house, Khyim gwáre láwo.

In me, in thee, in him,	Godi.	*Wáke di.
	Gadi.	Ikedi.
	Haremdi.	Akedi.

He gave to me, Go giwa.

He took it from me, thee, him,	Go ding-*	blapta.
	Ga ding-	
	Harem ding-	

He struck thee, Ga teupta.
Come into the house, Khyim gwáre piwo.
Go into the house, Khyim gwáre láwo.
Go into the water, Pwáku di wogno.
Come out of the water, { Pwáku ding glugno.
The inside of the house, Khyim á golá.
The outside of the house, Khyim á tolá.
Come from the outside of the house, { Khyim ke á tolang piwo.
Come from the inside of the house, { Khyim á golang glugno.
Come out from the house, { Khyim ding á tolá piwo / or Khyim ding glugno.
Go with me, Go nung láwo.
Sit by me, Wake pumdi bwakko.
Come near me, Wake pumdi piwo.
Sit beside me, Wake lá bwakko.
Sit on my knee, Wa phyemtodi bwakko.
Sleep in his bosom, Aphyemtodi ipo.
Put on thy shoulder, Ŕ balamdi jeullo.
Throw in or into the fire, { Me di piko. / Mi gware piko.
Put on the fire, Mi taure jeullo.
Take off from the fire, Mi taureng bláwo.
Put on, upon, the table, Mej táure jeullo.
Take off from the table, { Mej taureng bláwo.
Get on, or mount, the horse, { Ghora taure wogno.
Get off, or dismount from, the horse, } Ghora taureng glugno.
Put on the horse (goods), } Ghora taure jeullo.
Take off from the horse (goods), { Ghora taureng glun- / do or bláwo.
On the head, Piya taure.
Under the feet, { Kholi yeu.† / Kholi gwayeu.
Put your cap on your head, { Itáki i piya taure jeullo.
Put grass under his feet, { Á kholi gwayeu (nichasmen) jim jeullo.
Above, higher than, his head, } Á piya ding hateu.
Beneath, lower than, my feet, } Wa kholi ding hayeu.
Above your house is the cantonment, { Ikhyim ding haten la tilanga bwagdikha.
Below your house is the bazar, { I khyim ding háyeu la ledikha jyapdikha.
Above the mouth is the nose, { Sheö hateu la neu bwa.

* More usual and correct perhaps is the inflective form Wake. But it is also equal my, Wakedi, in me or mine and Wakeding, from me or from my.

† Gware = in, Gwayeu = under. To the last answers ha-yeu the one, meaning what touches, the other, what touches not, but lies below: so taure and ha-yeu, as to what is above.

Below the mouth is the chin, Shcö ha yeu la yóli bwa.
To, as far as, Nerá. Pumdi.
As far as him, Harem pumdi. Harem nera.
As far as Nepal, Nepal pumdi.
Towards Nepal, Nepal pumla. Nepal la.
North of Nepal, Nepal ding hateu la.
Near Nepal, Nepal nentha.
Far from Nepal, Nepal ding brába.
Towards night, Namringna (day setting).
Towards morning, Nam sona (day being born).
In the night, Teugnachidi.
In the day, Namtidi.
Cruel towards his children, Tamitawake la deu-kha giba.
Be kind towards me and mine, Wake la neuwo. Wa ta ke la neuwo.
Sit above me, Wake ding hateu la bwako.
Sit between us two, Wasike alimbu di bwako.
Sit below him, Ake ding hayeu la bwako.
Put on me, Wake taure jyúlo.
Put on him, Ake taure jyúlo.
The water comes from above and goes below, Pwáku hateu lang yú, hayeu la lá.
On the top of the hill, Syerte á gware di.
In the midst of the hill, Syerte á limbudi.
At the bottom of the hill, Syerte a pumdi.
From top of hill, Syerte á gware ding.
From middle of hill, Syerte á limbu ding.
From the bottom of the hill, Syerte á pum ding.
He dwells below me, Wake ding hayeu la bwá.
He dwells above me, Wake ding hateu la bwá.
Sit on me, Wake taure bwako.
Press under me, Wake hayeu lam chimna.
(Gnari = hill top; Jujeu = tree top or house top).
Underneath, under the chair, Khosingba gwayeu or a gwayeu.
Above, upon, the hand, Gu taure or, Gu á taure.
Put under, below, the table, Mej á gwayeu jy ulo.
Take out from under the table, Mej á gwá yeung bláwo.
Go through the door, Lapcho lang láwo or Lapcho á limbu lang láwo.
Come through the house, Khyim gwárim piwo or Khyim á gwa lang piwo.
Go through the hole, Alam lang gluguo.
Go through the river (wading), Pwáku di gwakso glugno.
Go over the couch, Ipdikha khwakso láwo.
Go over the river in boat, Dunga di woso glugno.
Go under the couch, Ipdikha likso glugno.
Come with me, Go nung piwo.
Go with him, Am- or Harem- nung láwo.
Why should I go with thee, Ga nung márcho lágna.
Go without me, Go manthi láwo.
Strike with force, Sokti mi teupo.
Strike without force, Sokti manthi teupo.
Sit before me, Wa gnalla di bwako.
Sit behind me, Wa notha di bwako.
Before, behind the door, Lapcho á gnalla di. Lapcho á notha la.
Opposite, Vis-a-Vis-me, Wa gnalla la. Wa gnalla di.
Sit at my side, Wake pumdi bwako.
Towards his side. Ake á pumla.
In the middle, Alimbu di.
To, at, the side, Apumdi.
Before night, Namrikso gnalla. Teugnachi dyumtheum. Nammá riktheum. Nammá wamtheum. Nam rikcho beladi.
At night fall, Nam- ringna. wamtana. Nam wancho beladi.
After night fall, Nam-wamso riskso notha. Nam wamtako. Nam riktako.
Since dawn, Didila mekeng.
Before dawn, Didila gnalla.
After dawn, Didila notha.
Since I came, Gopitina mekeng.
Before my arrival, Gojokpicho gnalla.
After my arrival, Gojokpicho notha.
After to-morrow, Dilla mekeng.
Before to-morrow, Dilla ma dyumtheu.
By night fall, Nam ringna. Nam wamtana.
Until night or Up to night, Teugnachi sambh. Nam wamtana sambh.
Towards the house, Khyim lá.
Towards me, Wake lá.
Towards night, Nam rikcho páwana.
Towards dawn, Teugnachi lána. Nam dhamna.
At dawn, Nam dhamna.
During the night, Teuguachi dyumna.

By the time I arrive, Pignána.
By the time thou arrivest, Piyena.
By the time he arrives, Pina.
After my arrival, Go piso notha.
After thy arrival, Ga piso notha.
Round about the house, Khyim harela yesela.
About the house, Khyim apumdi.
In the middle of the village, Dyel á limbu di.
On this side the river, Gulu yem pumdi.
On that side the river, Gulu myem pumdi.
He pierced him through the body, Ram hotáko sáta.
He went through the door, Lapcho lang glutako láta.
Go by the door, Lapcho lang láwo.
Go by the road, Lamlang láwo.
Far from the house, Khyim ding brába.
Near the fire, Mi nentha. Mi pumdi. Mi á pumdi.
Near me, Wake pumdi.
After this, that, Yem ding notha. Myem ding notha.
Before this, that, Yem ding gnalla. Myem ding gnalla.
Instead of, in lieu of, that, Myem ke áphle.
For the sake of me, Wake dáso.
For the love of thee I did it, Dwaktana kodid it, pátong.
For the love of me he did it, Dwakti kopapto.
As far as the house, Khyim á pumdi.
Short of, not so far as, the house, Khyim yesela.
Beyond the house, Khyim hárcla.
With a house there may be a marriage, Khyim dyumna groche dyum.
Without (wanting) a house there cannot be a marriage, Khyim manthi groche má dyum.
With a house he will marry if he have, &c. Khyim thi kheda groche páwa.
Without a house he will not marry, Khyim manthi kheda (or manthi) groche má páwa.
With me, Go nung.
Without me, Go manthi.
With thy father, I po nung.
Without my father, Ápá manthi.
I go not, Ma lágna.
A child without father, an orphan, Ápomanthiba tawo. Apomanthime tawo.
For the purpose of building a house, Khyim pácho dáso.
In the middle of the house, Khyim á limbu di.
Even with, on level with, the house, Khyim nung kwang khome.
With a will (bongre), Gyerstako. Gyerscho.
Without against the will (malgre), Mágyerstako. Mágyerscho.
Willy, nilly, Gyerscho má gyerscho.
In spite of her husband, Wancha má visthim.
For the love of her husband, Wancha dwak tako.
After the manner of the Newárs, Newar dau khwag no.*
In the form of fish, Gná khwogno.
After the manner of the Tibetans, Leucha dau khwogno.
In the disguise of a Tibetan, Leucha khwogno.

Conjunctions.

And, No word for it.
Also, likewise, Yo.
Or, No term for it.
Nor, No word.
Nor this, Yam ye má.
Nor that, Myam ye ma.
Moreover. Besides, Myam taure.
Than (comp.) Ding.
As, Gyekho.
So, Mekho.
As, so, like, Yé khwogno.
this, that, Mé khwogno.
How? what like, Gye khwogno.
How? in what way, Gyé-khopáso.
As well as, Yé khome neuba.
As ill as, Yé khome-má neuba.
But, Náká.
Nevertheless. Notwithstanding, Náká.
Though, yet, still, Náká.
If, Khéda.—Khédda.
If not, unless, Má kheda.
Except, Wáso.
Whether or not, Bwála má bwála.
In the meanwhile, Yékhona. Mékhona.
Thereon, Myem taure.
To wit, that is to say, Dáso dáta. Mára dayena.

* Khwogno = like; the word for manner or form is kho.

Why, { Márcho. / Máragna.
Because, since, { Yem paptako.
As, { Myem paptako.

Yes, Aje (true).

No, Máá, (it is not).

Verbal negative, Má.
Verbal prohibitive, Má.
Noun privitive, Má.

Báhing Adverbs.

Adverbs of time.

To-day, Ána.
To-morrow, Dillá.
Yesterday, Sanamti.
Day after to-morrow, Niti.
Day before yesterday, Nikhabol.
This year, Yemthoche.
Last year, Sántho.
Year before last, Niware.
Coming year, Máta.
Year after that, Niwa.
Now, Yékhona.
Then, Mékhona.
When? Gyéna.
When, rel., Gyéna.
Then, correl, Mékhona.
Instantly, Bachéu.
By and by, Gyer kwongmi.
At once, at one time, Kwongkhó.
Before, priorly, Gnalla.
After, afterwards, Nóla.
Since, Gyéna.
Till, until, No word. It is expressed by theum added to the root and the negative, or by the negative gerund.*
Till now, / Hitherto, } Ána sambh (sambh is Khas.)
Till then, Metti namti.
Till when? how long? Giskonamti.
Formerly, long ago, Nyéshé.
At present, now a days, Ánampilli.
Whilst, Mim, added to a verb, or the gerund simply.†
Henceforth, / Hereafter, } Ánamekeng.
Thenceforth, / Thereafter, } Memnamtimekeng.
Ever, No word.
Never, Genaiyo.
Often, Yáko pala.
How often, Gisko pala.
Sometimes, No word.
Once or twice, Kwá bále nippále.
Once, Kwá bále.
Twice, Nippále.
Thrice, Sápále.
Four times, Seppále.
Five times, Gnó pále.
Six times, Rú pále.
Seven times, Chá pále.
Eight times, Yá pále.
Nine times, Ghú pále.
Ten times, Kwaddyum pále.
Early, Bachem pasomami.
Late, Wákha pasomami.
In the day, Nam bwoktáná.
At night, / In the night, } Tengnáchi dyumtana.
All day, Nam dongmókho.
Daily, Namtike namti.
At sunrise, Namdhamna.
At cock crow, { Bá griná. / Bá gricho pawáno.
At dawn, Hauhaudyumchopawana.
At sunset, { Nam wamtana. / Nam wamcho pawana.
At dusk, No word.
At night fall, { Nam rigna. / Teugnachi dyumna.
From night till morn, { Teugnachi mekeng didila sambh.
At noon, Namhelschodi.
At midnight, Teugnachi helschodi.
To-morrow morning, Dilla didiladi.
Yesterday at night, Sanamtiten gnachidi.
In two or three days, Nikkha sakkhá.
In three or four days, Sakkha sekkha.
In four or five days, Sekkha gnokkha.
How long? Gisko namti.

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* e. g. stay till I come, gómá pignana, or gó má pi theum, bwákó.

† e. g. whilst he lives I will not go, Harem blemmim gó má lágna. Whilst he was walking he fell down. Harem gwaktana dokta.

As long, rel. Gisko namti.
So long, correl. Metti namti.
Again, repeatedly, Anáiyo.
Again, returning, Létako.

Adverbs of Place.

Here, Yéke.
There, Myéke.
Where? Gyéke.
Where, rel. Gyéke.
There, correl. Méke. Mekegnó.
Here and there, Hárela yesela.
Hither, Hereward, } Yékholá.
Thither, Thereward, } Myékholá.
Hence, Yékeng.
Thence, Myékeng.
Whence? Gyélang.
Whence, rel. Gyélang.
Thence, correl. Myekeng.
By what way? Agyem lamlang.
By this way, Yem lamlang.
By that way, Myem lamlang.
How near? Gisko nentha.
How far? Gisko brába.
How far? i. e. to what limit, } Gyéla (where).
This far, Yeke (here).
That far, Myéke (there).
Near, Nentha.
Far, Brába.
How near? Gisko nentha.
How far? Gisko brába lang.
From after, Brába lang.
From near, Nentha lang.
In the near, Nentha di.
In the far, Brába di.
This near, Yeti nentha.
That near, Myeti nentha.
Nearer, { Anaiyo nentha. / Yemdinganaiyo nentha.
Nearest, very near, { Hauppeding nentha. / Thé nentha.
Rather near, Dekho nentha.
Rather far, Dekho brába.
Very far, Thé brába.
Up or upwards, (an accli-vity whence water comes, { Hateula. / Yakayeula.
From up, from above of slope, } Hateu lang.
From down, from below of slope, } Hayeu lang.
Up (perpendicular), Taúre.
Down (ditto), { Gwáre. / Gwáyeu.* / Apumyeu.
From above, perpendicular, Taureng.
From below, ditto, { Apumyeung. / Gwáreng. / Gwáyeung.
Upwards, ditto, Taurela.
Downwards, ditto, Gwáyeula. Yeula.
Upwards (on slope), Hateula.
Downwards (on slope), Hayeula.
On the top, Ajujudi.
In, at, the bottom. Apumdi.
From the top, { Ajujuding. / Ajuju lang.
From the bottom, Apumding.
Out (issuing), Gluko. Glutako.
In (entering), Wóko. Wotako.
Out, outside. Atola (with noun).
In, within, Gwáre. Agware.
Towards this side, Yesehamba la.
Towards that side, Hare hamba la.
On this side, Yese hamba di.
On that side, Hare hamba di.
On both sides, { Hare hamba. / Yese hamba. } di.
Round, Khirsoko.
Before, Gnalla.
After, Nótha.
Opposite, vis a vis, Gnalla.
Abreast, Kwongkho.
Straight onwards, No word.
Onwards, forwards, Gnálla lá.
Backwards, Nothalá.

Adverbs of manner, cause, quality, quantity, &c.

How? in what way, { Yékho. / Yekhopasa.
Thus, in that way, { Myekho. / Myekhopasa.
Why? for what reason, { Gyegná. / Máragná. / Marha.
For this reason, Yé gna?
For that reason, Myé gna?
How? what like? Gyekhome.
This like, Yekhome.

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* Taure and gwáre are chiefly prepositions and the latter means rather in below. Gwáyeu is better for the latter, or yeu. But none of them quite answers. The verbs express the meanings.

That like, Myekhome.
How much? how many? Gisko.
As many, as much, Gisko.
So many, so much, Metti.
How often? Gisko pála.
How great? Gisko gnólo.
How small? Gisko yáke.
Well, rightly, Neuba pawoko. Neuba paso. Neuba pasomami. Neuba pawako. Neuba paptako.*
Ill, badly, wrongly, Máneuba páso, &c.
Wisely, Jokso and Joksomami, &c. Teuso and Teusomami, &c.*
Foolishly, Majoksomami. Mateusomami.†
Hungrily, Solimi.
Thirstily, Pwáku dwaktimi.
Angrily, Soksomi pawoko. Sokso paso, &c.
Gladly, Gyersimi. Gyersipaso.
Joyfully, Gyersoko.
Strongly, Soktimi. Soktipawoko, &c.
Weakly, Sokti manthimi.
Gently, Wákha paso or pawoko, &c.
Noisily, Syandami yandapaso or pasoko or pawoko.
Silently, Liba dyumso.
With blows, Teupsomami. Teuptako.
Evenly, on level with, Deuso.
Evenly, straightly, smoothly, Deuso.
Much, a great deal, Dhékwóng. Dhékong.
A little, Dékho.
Neither more nor less, Mádékho ma thé.
Less, Dékho.
More, Thé.
Again (afresh), Gapti. Anaiyo.
Back (the same), Leti. Letako.
Thoroughly, Theumsomami.
Completely, Yáko. Hauppe.
Partially, Dekho bwaso. Dékho jyulsomami. Dékho jyultako.
Heavily, Helpasoko. Helpasomami. Helpattako. Helpawako.
Lightly, Hampaso. Hampasomami. Hampattako. Hampawoko.
Tightly, Khipso. Khipsomami. Khiptako.
Slackly, Thyelvim paso. Thyelvim pasomami. Thyelvim paptako. Thyelvim pawako.
Greatly, Dhekong.
Slightly, trivially, Dékho.
In cowardly way, Gnimami. Gnitako. Gniko.
Bravely, Gnima manthimi. Mágniko. Mágnitako.
Modestly, Gnunemi. Gnune pawoko.
Impudently, Gnune manthi.
Secretly, Khleuscho mami.
Openly, Kwainsopascho. Kwainsopaschomami.
Jestingly, Rischomami.
Seriously, Ajedaso mami.
Slowly, Wákha.
Hastily, Gruksomami. Grukso. Gruktako.
Mortally, Byaktam sambh.
Skin deep, Ákokte sambh.
Together, Kwongkho.
Separately, Wang wang.
Singly or one by one, Kwong kwong paso.
Solitarily, Ygicha.
With a companion, Warcha nung.
A foot, Gwakoko. Gwakso.
On horse back, Wognoko.
Truly, Aje dásomami. Aje dyumsomami.
Falsely, Limochelso.

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* All these are gerundial, like the great majority of the adverbs. But if imperation is involved, the gerund sign is added to the imperative, not to the indicative.

† Or with main verb in indicative, ma jogako for present and ma joktako for preterite sense. See note at "wisely." This is merely the negative form of the same word obtained by prefixing the particle of negation or má.

(The remainder in the next volume.)

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of October, 1856.

Latitude 22° 33′ 1″ North. Longitude 88° 20′ 34″ East.

Height of the Cistern of the Standard Barometer above the Sea level, 18.11 Feet.

Daily Means, &c. of the Observations and of the Hygrometrical elements dependent thereon.

Date.	Mean Height of the Barometer at 32° Fahr.	Range of the Barometer during the day.			Mean Dry Bulb Thermometer.	Range of the Temperature during the day.		
		Max.	Min.	Diff.		Max.	Min.	Diff.
	Inches.	Inches.	Inches.	Inches.	o	o	o	o
1	29.840	29.894	29.779	0.115	80.9	86.2	78.4	7.8
2	.811	.885	.741	.144	81.5	87.0	77.6	9.4
3	.762	.833	.703	.130	81.2	84.1	79.0	5.1
4	.735	.807	.655	.152	83.6	88.6	79.3	9.3
5	*Sunday.*							
6	.714	.793	.655	.138	85.1	90.4	81.6	8.8
7	.738	.788	.699	.089	82.8	89.0	79.0	10.0
8	.779	.840	.724	.116	81.4	87.6	79.0	8.6
9	.771	.850	.684	.166	83.7	89.2	79.3	9.9
10	.698	.784	.638	.146	78.8	82.4	76.2	6.2
11	.624	.673	.577	.096	81.3	85.0	77.0	8 0
12	*Sunday.*							
13	.758	.815	.713	.102	81.9	85.8	78.6	7.2
14	.799	.853	.753	.100	82.7	88.0	79,3	8.7
15	.846	.906	.788	.118	82.6	87.8	79.3	8.5
16	.844	.918	.777	.141	84.1	89.4	79.4	10.0
17	.831	.893	.778	.115	83.1	86.9	80.0	6.9
18	.830	.907	.766	.141	81.4	87.1	77.0	10.1
19	*Sunday*							
20	.719	.785	.660	.125	80.0	86.6	74.4	12.2
21	.738	.801	.696	.105	79.4	84.8	74 1	10.7
22	.738	.799	.684	.115	79.6	84.8	74.4	10.4
23	.771	.834	.723	.111	77.7	83.4	72.0	11.4
24	.823	.884	.772	.112	76.9	80.4	74.2	6.2
25	.887	.951	.838	.113	77.4	82.8	73.0	9.8
26	*Sunday.*							
27	.918	.982	.852	.130	80.0	86.0	74.8	11.2
28	.893	.972	.831	.141	80.5	87.0	74.3	12 7
29	.829	.898	.760	.138	81.3	87.5	76.4	11.1
30	.817	.868	.763	.105	80.4	88.6	76.6	12.0
31	.894	.966	.812	.154	76.7	79.6	74.9	4.7

The Mean height of the Barometer, as likewise the Mean dry and wet Bulb Thermometers are derived, from the twenty-four hourly observations made, during the day.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of October, 1856.

Daily Means, &c. of the Observations and of the Hygrometrical elements dependent thereon. *(Continued.)*

Date.	Mean Wet Bulb Thermometer.	Dry Bulb above Wet.	Computed Dew Point.	Dry Bulb above Dew Point.	Mean Elastic force of Vapour.	Mean Weight of Vapour in a cubic foot of air.	Additional weight of Vapour required for complete saturation.	Mean degree of Humidity, complete saturation being unity.
	o	o	o	o	Inches.	T. gr.	T. gr.	
1	78.7	2.2	77.6	3.3	0.928	10.01	1.09	0.90
2	79.0	2.5	77.7	3.8	.931	.02	.29	.89
3	79.3	1.9	78.3	2.9	.949	.22	0.99	.91
4	80.4	3.2	78.8	4.8	.964	.34	1.69	.86
5	*Sunday.*							
6	81.8	3.3	80.1	5.0	1.005	.73	.84	.85
7	80.2	2.6	78.9	3.9	0.967	.39	.36	.88
8	78.8	2.6	77.5	3.9	.925	9.96	.31	.88
9	79.8	3.9	77.8	5.9	.934	10.01	2.06	.83
10	77.1	1.7	76.2	2.6	.887	9.60	0.84	.92
11	79.4	1.9	78.4	2.9	.952	10.25	.99	.91
12	*Sunday.*							
13	79.4	2.5	78.1	3.8	.943	.14	1.30	.89
14	79.2	3.5	77.4	5.3	.922	9.91	.81	.85
15	79.2	3.4	77.5	5.1	.925	.94	.74	.85
16	80.1	4.0	78.1	6.0	.943	10.10	2.11	.83
17	79.2	3.9	77.2	5.9	.916	9.83	.03	.83
18	75.2	6.2	72.1	9.3	.778	8.38	.89	.74
19	*Sunday.*							
20	74.4	5.6	71.6	8.4	.766	.27	.54	.77
21	74.0	5.4	71.3	8.1	.758	.20	.42	.77
22	73.9	5.7	71.0	8.6	.751	.10	.59	.76
23	71.1	6.6	67.8	9.9	.677	7.33	.77	.73
24	72.8	4.1	70.7	6.2	.744	8.08	1.78	.82
25	74.3	3.1	72.7	4.7	.792	.59	.42	.86
26	*Sunday.*							
27	74.7	5.3	72.0	8.0	.776	.36	2.45	.77
28	74.5	6.0	71.5	9.0	.763	.23	.75	.75
29	76.2	5.1	73.6	7.7	.817	.79	.45	.78
30	76.3	4.1	74.2	6.2	.832	.98	1.96	.82
31	74.4	2.3	73.2	3.5	.806	.75	.05	.89

All the Hygrometrical elements are computed by the Greenwich constants.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of October, 1856.

Hourly Means, &c. of the Observations and of the Hygrometrical elements dependent thereon.

Hour.	Mean Height of the Barometer at 32° Fahr.	Range of the Barometer for each hour during the month.			Mean Dry Bulb Thermometer.	Range of the Temperature for each hour during the month.		
		Max.	Min.	Diff.		Max.	Min.	Diff.
	Inches.	Inches.	Inches.	Inches.	o	o	o	o
Mid-night.	29.797	29.923	29.631	0.292	79.3	84.0	74.9	9.1
1	.783	.922	.614	.308	79.0	83.8	74.9	8.9
2	.776	.906	.592	.314	78.6	83.4	75.0	8.4
3	.764	.900	.577	.323	78.5	83.2	74.5	8.7
4	.768	.900	.581	.319	78.1	82.8	73.5	9.3
5	.776	.921	.589	.332	78.0	82.6	73.0	9.6
6	.800	.934	.610	.324	77.7	82.4	72.6	9.8
7	.821	.959	.632	.327	78.3	83.6	72.0	11.6
8	.843	.969	.667	.302	80.0	86.0	73.2	12.8
9	.855	.980	.671	.309	80.9	87.2	73.0	14.2
10	.853	.982	.673	.309	82.1	88.6	73.6	15.0
11	.836	.949	.658	.291	83.2	89.0	76.4	12.6
Noon.	.809	.924	.627	.297	84.8	88.6	75.4	13.2
1	.782	.904	.609	.295	85.1	89.1	77.4	11.7
2	.761	.878	.590	.288	84.7	89.4	78.4	11.0
3	.745	.873	.590	.283	84.8	90.4	76.2	14.2
4	.743	.891	.585	.306	84.0	90.4	75.4	15.0
5	.750	.914	.603	.311	83.2	89.6	74.9	14.7
6	.758	.914	.614	.300	81.8	86.2	75.5	10.7
7	.778	.929	.633	.296	81.0	85.7	75.8	9.9
8	.798	.955	.648	.307	80.5	85.3	75.8	9.5
9	.808	.965	.658	.307	80.2	85.0	75.6	9.4
10	.812	.966	.660	.306	79.9	85.0	75.2	9.8
11	.808	.962	.660	.302	79.5	84.4	75.4	9.0

The Mean height of the Barometer, as likewise the Mean dry and wet Bulb Thermometers are derived from the Observations made at the several hours during the month.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of October, 1856.

Hourly Means, &c. of the Observations and of the Hygrometrical elements dependent thereon.—*(Continued.)*

Hour.	Mean Wet Bulb Thermometer.	Dry Bulb above Wet.	Computed Dew point.	Dry Bulb above Dew point.	Mean elastic force of Vapour.	Mean Weight of Vapour in a Cubic foot of Air.	Additional weight of vapour required for complete saturation.	Mean degree of humidity, complete saturation being unity.
	o	o	o	o	Inches.	Troy grs.	Troy grs.	
Mid-night.	76.9	2.4	75.7	3.6	0.873	9.43	1.16	0.89
1	76.8	2.2	75.7	3.3	.873	.45	.05	.90
2	76.4	2.2	75.3	3.3	.862	.34	.04	.90
3	76.4	2.1	75.3	3.2	.862	.34	.01	.90
4	76.0	2.1	74.9	3.2	.851	.22	.00	.90
5	75.9	2.1	74.8	3.2	.849	.20	0.99	.90
6	75.6	2.1	74.5	3.2	.840	.12	.98	.90
7	76.1	2.2	75.0	3.3	.854	.25	1.03	.90
8	76.8	3.2	75.2	4.8	.860	.28	.53	.86
9	76.9	4.0	74.9	6.0	.851	.17	.93	.83
10	77.4	4.7	75.0	7.1	.854	.18	2.33	.80
11	77.6	5.6	74.8	8.4	.849	.11	.78	.77
Noon.	78.3	6.5	75.0	9.8	.854	.12	3.34	.73
1	78.6	6.5	75.3	9.8	.862	.21	.36	.73
2	78.3	6.4	75.1	9.6	.857	.15	.27	.74
3	78.1	6.7	74.7	10.1	.846	.05	.41	.73
4	77.8	6.2	74.7	9.3	.846	.06	.11	.74
5	77.8	5.4	75.1	8.1	.857	.19	2.70	.77
6	77.6	4.2	75.5	6.3	.868	.35	.05	.82
7	77.7	3.3	76.0	5.0	.882	.50	1.64	.85
8	77.6	2.9	76.1	4.4	.885	.55	.43	.87
9	77.4	2.8	76.0	4.2	.882	.52	.36	.88
10	77.2	2.7	75.8	4.1	.876	.46	.32	.88
11	76.9	2.6	75.6	3.9	.871	.40	.26	.88

All the Hygrometrical elements are computed by the Greenwich constants

Solar radiation, Weather, &c.

Date.	Max. Solar radiation.	Rain Gauge 5 feet above Ground.	Prevailing direction of the Wind.	General Aspect of the Sky.
	o	Inches.		[o'clock.
1	..	0.39	S. E. & E.	Cloudy, also occasionally raining after 12
2	..	2.13	S. & S. E.	Cloudy, also raining in the morning & at 5 P. M.
	..	0.56	S. E. & S.	Cloudless till 4 A. M., cloudy till 9 P. M. cloudless afterwards. Also raining at 9 A. M.
4	..	..	S.	Cloudless till 6 A. M. scattered ∩i till 6 P. M. cloudless afterwards.
5	*Sunday.*			
6	144.5	0.16	W. & S. E.	Cloudless till 4 A. M. scatd. ∩i till 6 P. M. cloudless afterwards. Also slight rain at 10 A. M. & 6 P. M.
7	..	2.00	S.	Cloudless till 4 A. M. cloudy afterwards, also heavy rain from 2 P. M. to 3 P. M.
8	140.0	0.16	N. E.	Cloudless till 4 A. M. scatd. _i & ∩i till Noon, cloudy afterwards, also slight rain between 2 & 4 P. M.
9	141.0	..	E. & N. & N. E.	Scattered clouds of various kinds.
10	..	1.84	N. E.	Cloudy with incessant rain from 7 A. M. till midnight.
11	..	0.52	E. & S. E. (both blowing high.)	Cloudy, also constantly drizzling between midnight & 10 A. M.
12	*Sunday.*	0.63		
13	..	0.49	S. & E. & S. E.	Cloudy, also raining heavily at midnight.
14	141.0	..	S. & S. W.	Scatd. clouds of various kinds. [wards.
15	136.0	..	Variable.	Cloudless till 6 A. M. scatd. clouds after-
16	148.0	..	Variable.	Cloudless till 7 A. M. scatd. clouds till 5 P. M. cloudless afterwards.
17	133.0	..	N. W. & N. & S. W.	Scatd. _i & ∩i till 9 A. M. cloudy till 4
18	143.0	..	N. W.	Cloudless. [P. M. cloudless afterwards.
19	*Sunday.*			
20	143.5	..	N. W.	Cloudless till 5 A. M. scatd. \i & _i till 3 P. M. cloudless afterwards. [wards.
21	131.2	..	N. W.	Scatd. \i & _i till 7 P. M., cloudless after-
22	132.0	..	N. W.	Cloudless till 4 A. M. scatd. _i till 6 P. M. cloudless afterwards. [wards.
23	128.0	..	N. W. & W.	Cloudless till 4 A. M. scatd. clouds after-
24	..	.	N. W.	Cloudy.
25	132.8	0.10	S.	Scatd. clouds and occasionally drizzling before sunrise.
26	*Sunday.*			
27	140.2	..	N. W.	Cloudless till 10 A. M. scatd. _i & \i & ∩i till 4 P. M. cloudless afterwards.
28	143.6	..	N. W.	Cloudless till 8 A. M. scatd. _i & ∩i till 8 P. M. cloudless afterwards.
29	134.0	..	N. & S.	Cloudless till 3 A. M. scatd. _i & ∩i till 6 P. M. cloudless afterwards.
30	143.0	0.10	N. & S. E.	Scatd. clouds of various kinds till 3 P. M. cloudy with little rain till 7 P. M. cloudless afterwards.
31	..	0.13	N. E. & S.	Cloudless till 3 A. M. cloudy afterwards with little rain between 2 and 5 P. M.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of October, 1856.

Monthly Results.

		Inches.
Mean height of the Barometer for the month, ...		29.793
Max. height of the Barometer, occurred at 10 A. M. on the 27th, ...		29.982
Min. height of the Barometer, occurred at 3 A. M. on the 11th, ...		29.577
Extreme Range of the Barometer during the month, ...		0.405

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		o
Mean Dry Bulb Thermometer for the month, ...		81.0
Max. Temperature, occurred at 3 & 4 P. M. on the 6th, ...		90.4
Min. Temperature, occurred at 7 A. M. on the 23rd, ...		72.0
Extreme Range of the Temperature during the month, ...		18.4

Mean Wet Bulb Thermometer for the month, ...		77.2
Mean Dry Bulb Thermometer above Mean Wet Bulb Thermometer, ...		3.8
Computed Mean Dew Point for the month, ...		75.3
Mean Dry Bulb Thermometer above computed Mean Dew Point, ...		5.7
		Inches.
Mean Elastic force of vapour for the month, ...		0.862

		Troy grains.
Mean weight of vapour for the month, ...		9.29
Additional weight of vapour required for complete saturation, ...		1.85
Mean degree of Humidity for the month, complete saturation being unity,		0.83

		Inches.
Rained 15 days. Max. fall of rain during 24 hours, ...		2.13
Total amount of rain during the month, ...		9.21
Prevailing direction of the Wind N. W. & S.		

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of October, 1856.

Monthly Results.

Table showing the number of days on which at a given hour any particular wind blew, together with the number of days on which at the same hour, when any particular wind was blowing it rained.

Hour.	N.	Rain on.	N. E.	Rain on.	E.	Rain on.	S. E.	Rain on.	S.	Rain on.	S. W.	Rain on.	W.	Rain on.	N. W.	Rain on.	Calm.	Rain on.
	No. of days.																	
Midnight.	1		3	1	2		3		3	1	1		1		7	1	6	
1	2		3	1	2		2		4		1		1		6		6	
2	2	1	1		3	1	3		4		1		1		6		5	
3	1	1	2		3	1	3		4		1				7		5	
4	3		2		3		3		4		1				8		2	
5	2		2		3	1	4	1	4		1		1		7	1	2	
6	2		2		2	1	6	2	3		1		2		7		2	
7	3		2		2		5	1	4		3		3		5			
8	5		2	1	3	1	2		4	1	2		2		7	1		
9	6		2	1	4		2	1	3		2		2		6	1		
10	6		2	1	4	1	1	1	3		1		4	1	6	1		
11	7	1	1		3		2	1	2		3	1	3		6			
Noon.	5		2	1			4		3		2		4		7			
1	5		2	1	1		4	1	1		2		3		9			
2	4		3	2			4	2	5	1			5		6			
3	4	1	3	2	2	1	2		2		3		5		6			
4	1		3	2	2	2	2	1	4		2		4	1	9			
5	1		4	1			2		6	2	1		4	1	9			
6			2	1	1		6	2	8				2		8			
7			2	1	1		4		9				1		7		3	
8			3	1	1		3	1	8				1		7		4	
9	1		3	1	1		2		8				2		7		3	
10	1		3	1	1		2		8				2		7		3	
11			4	1	1		3	1	7				2		7		3	

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, for the month of November, 1856.

Latitude 22° 33′ 1″ North. Longitude 88° 20′ 34″ East.

Height of the Cistern of the Standard Barometer above the Sea level, feet. 18.11

Daily Means, &c. of the Observations and of the Hygrometrical elements dependent thereon.

Date.	Mean Height of the Barometer at 32° Fahr.	Range of the Barometer during the day.			Mean Dry Bulb Thermometer.	Range of the Temperature during the day.		
		Max.	Min.	Diff.		Max.	Min.	Diff.
	Inches.	Inches.	Inches.	Inches.	o	o	o	o
1	29.966	30.042	29.924	0.118	80.1	87.4	74.5	12.9
2	*Sunday.*							
3	.961	.029	.904	.135	80.6	87.3	74.2	13.1
4	.916	.001	.854	.147	81.0	87.3	75.6	11.7
5	.906	29.982	.841	.141	80.9	86.9	76.6	10.3
6	.934	30.008	.886	.122	80.9	87.2	76.7	10.5
7	.955	.028	.900	.128	80.5	86.8	75.4	11.4
8	.932	29.998	.879	.119	79.6	86.6	74.4	12.2
9	*Sunday.*							
10	.990	30.055	.946	.109	76.7	84.4	69.2	15.2
11	.985	.065	.927	.138	75.0	82.6	69.7	12.9
12	30.006	.079	.958	.121	74.9	83.4	67.4	16.0
13	.022	.105	.958	.147	74.3	82.9	67.4	15.5
14	.007	.087	.949	.138	73.2	82.0	66.2	15.8
15	29.980	.055	.932	.123	74.1	82.8	67.2	15.6
16	*Sunday.*							
17	30.001	.076	.932	.144	75.0	82.9	68.3	14.6
18	29.965	.041	.914	.127	75.1	82.6	69.0	13.6
19	.949	.011	.901	.110	74.4	81.8	68.6	13.2
20	.973	.054	.932	.122	73.9	80.2	69.0	11.2
21	.986	.055	.948	.107	73.6	82.2	67.6	14.6
22	.978	.039	.935	.104	71.8	76.6	68.4	8.2
23	*Sunday.*							
24	.964	.037	.911	.126	71.0	74.2	67.2	7.0
25	.977	.030	.925	.105	73.2	77.8	70.8	7.0
26	.988	.071	.928	.143	71.8	79.4	66.4	13.0
27	.973	.050	.898	.152	70.0	77.4	63.9	13.5
28	.950	.028	.896	.132	68.8	77.6	61.9	15.7
29	.971	.047	.921	.126	69.5	78.4	62.3	16.1
30	*Sunday.*							

The Mean height of the Barometer, as likewise the Mean dry and wet Bulb Thermometers are derived, from the Twenty-four hourly observations made, during the day.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, for the month of November, 1856.

Daily Means, &c. of the Observations and of the Hygrometrical elements dependent thereon.

Date.	Mean Wet Bulb Thermometer.	Dry Bulb above Wet.	Computed Dew Point.	Dry Bulb above Dew Point.	Mean Elastic force of Vapour.	Mean Weight of Vapour in a cubic foot of Air.	Additional Weight of Vapour required for complete saturation.	Mean degree of Humidity complete saturation being unity.
	o	o	o	o	Inches.	T. gr.	T. gr.	
1	75.1	5.0	72.6	7.5	0.790	8.52	2.32	0.79
2	*Sunday.*							
3	75.8	4.8	73.4	7.2	.811	.75	.26	.80
4	76.1	4.9	73.6	7.4	.817	.80	.34	.79
5	76.4	4.5	74.1	6.8	.830	.94	.16	.81
6	76.0	4.9	73.5	7.4	.814	.78	.32	.79
7	75.2	5.3	72.5	8.0	.787	.49	.49	.77
8	73.3	6.3	70.1	9.5	.729	7.87	.82	.74
9	*Sunday.*							
10	69.1	7.6	65.3	11.4	.623	6.78	3.02	.69
11	67.4	7.6	63.6	11.4	.590	.43	2.88	.69
12	68.1	6.8	64.7	10.2	.611	.66	.62	.72
13	67.3	7.0	63.8	10.5	.593	.46	.66	.71
14	66.5	6.7	63.1	10.1	.580	.34	.48	.72
15	67.5	6.6	64.2	9.9	.601	.56	.51	.72
16	*Sunday.*							
17	69.0	6.0	66.0	9.0	.638	.95	.36	.75
18	68.9	6.2	65.8	9.3	.634	.91	.43	.74
19	69.5	4.9	67.0	7.4	.659	7.20	1.95	.79
20	69.0	4.9	66.5	7.4	.648	.09	.92	.79
21	68.0	5.6	65.2	8.4	.621	6.80	2.13	.76
22	67.4	4.4	65.2	6.6	.621	.81	1.64	.81
23	*Sunday.*							
24	69.2	1.8	68.3	2.7	.688	7.55	0.70	.92
25	70.6	2.6	69.3	3.9	.711	.77	1.05	.88
26	67.6	4.2	65.5	6.3	.628	6.90	.55	.82
27	63.8	6.2	60.7	9.3	.536	5.89	2.11	.74
28	63.1	5.7	60.2	8.6	.527	.80	1.91	.75
29	64.0	5.5	61.2	8.3	.544	6.00	.88	.76
30	*Sunday.*							

All the Hygrometrical elements are computed by the Greenwich constants.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of November, 1856.

Hourly Means, &c. of the Observations and of the Hygrometrical elements dependent thereon.

Hour.	Mean Height of the Barometer at 32° Fahr.	Range of the Barometer for each hour during the month.			Mean Dry Bulb Thermometer.	Range of the Temperature for each hour during the month.		
		Max.	Min.	Diff.		Max.	Min.	Diff.
	Inches.	Inches.	Inches.	Inches.	o	o	o	o
Midnight.	29.968	30.028	29.906	0.122	72.3	78.7	65.2	13.5
1	.962	.020	.897	.123	71.7	78.4	64.4	14.0
2	.953	.012	.893	.119	71.3	77.8	63.7	14.1
3	.948	.002	.886	.116	71.0	77.6	63.4	14.2
4	.947	.004	.888	.116	70.2	77.0	62.7	14.3
5	.960	.013	.907	.106	69.9	77.0	62.2	14.8
6	.981	.048	.927	.121	69.6	76.7	61.9	14.8
7	30.004	.060	.957	.103	70.1	77.2	62.2	15.0
8	.029	.088	.975	.113	72.8	80.1	65.0	15.1
9	.043	.105	.982	.123	75.5	82.0	69.2	12.8
10	.038	.082	.977	.105	77.1	83.0	70.6	12.4
11	.015	.068	.945	.123	79.1	86.1	73.2	12.9
Noon.	29.984	.040	.912	.128	80.8	86.8	73.4	13.4
1	.952	.011	.884	.127	81.6	87.4	73.8	13.6
2	.932	29.994	.854	.140	82.2	87.3	74.2	13.1
3	.921	.975	.841	.134	81.7	87.3	73.4	13.9
4	.919	.970	.845	.125	80.1	85.8	73.2	12.6
5	.925	.976	.853	.123	79.0	85.6	72.9	12.7
6	.934	.985	.861	.124	77.2	83.6	71.2	12.4
7	.951	30.007	.887	.120	75.9	82.0	69.6	12.4
8	.966	.024	.900	.124	75.0	81.2	68.2	13.0
9	.976	.039	.910	.129	74.1	80.4	67.6	12.8
10	.982	.034	.905	.129	73.1	79.8	66.8	13.0
11	.973	.034	.898	.136	72.7	79.4	66.0	13.4

The Mean height of the Barometer, as likewise the Mean dry and wet Bulb Thermometers are derived from the Observations made at the several hours during the month.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of November, 1856.

Hourly Means, &c. of the Observations and of the Hygrometrical elements dependent thereon.

Hour.	Mean Wet Bulb Thermometer.	Dry Bulb above Wet.	Computed Dew Point.	Dry Bulb above Dew Point.	Mean Elastic Force of Vapour.	Mean Weight of Vapour in a cubic foot of Air.	Additional Weight of Vapour required for complete saturation.	Mean degree of Humidity complete saturation being unity.
	o	o	o	o	Inches.	T. gr.	T. gr.	
Midnight.	69.2	3.1	67.6	4.7	0.672	7.37	1.21	0.86
1	68.7	3.0	67.2	4.5	.664	.28	.15	.86
2	68.5	2.8	67.1	4.2	.661	.26	.07	.87
3	68.1	2.9	66.6	4.4	.651	.15	.10	.87
4	67.6	2.6	66.3	3.9	.644	.09	0.96	.88
5	67.4	2.5	66.1	3.8	.640	.04	.94	.88
6	67.3	2.3	66.1	3.5	.640	.04	.86	.89
7	67.6	2.5	66.3	3.8	.644	.09	.94	.88
8	68.7	4.1	66.6	6.2	.651	.12	1.59	.82
9	69.8	5.7	66.9	8.6	.657	.15	2.31	.76
10	70.1	7.0	66.6	10.5	.651	.05	.87	.71
11	70.9	8.2	66.8	12.3	.655	.09	3.44	.67
Noon.	71.2	9.6	66.4	14.4	.646	6.97	4.10	.63
1	71.5	10.1	66.4	15.2	.646	.95	.39	.61
2	72.0	10.2	66.9	15.3	.657	7.06	.48	.61
3	71.4	10.3	66.2	15.5	.642	6.89	.48	.61
4	70.8	9.3	66.1	14.0	.640	.90	3.94	.64
5	71.0	8.0	67.0	12.0	.659	7.12	.38	.68
6	71.3	5.9	68.3	8.9	.688	.46	2.49	.75
7	70.9	5.0	68.4	7.5	.690	.50	.07	.78
8	70.7	4.3	68.5	6.5	.692	.54	1.77	.81
9	70.2	3.9	68.2	5.9	.686	.49	.58	.83
10	69.5	3.6	67.7	5.4	.674	.39	.40	.84
11	69.3	3.4	67.6	5.1	.672	.37	.31	.85

All the Hygrometrical elements are computed by the Greenwich constants.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of November, 1856.

Solar Radiation, Weather, &c.

Date.	Max. Solar radiation.	Rain Gauge 5 feet above Ground.	Prevailing direction of the Wind.	General Aspect of the Sky.
	o	Inches.		
1	141.4	..	S.	Scattered clouds till 6 P. M. cloudless afterwards.
2	*Sunday.*			
3	141.0	..	W. & S.	Cloudless.
4	145.8	..	S. W. & W.	Cloudless nearly the whole day.
5	136.7	..	S. W. & W.	Cloudless till 5 A. M. scattered _i and ∩i till 6 P. M. cloudless afterwards.
6	139.0	..	N.	Cloudless till 9 A. M. scattered ∩i till 5 P. M. cloudless afterwards.
7	141.5	..	N. & N. W.	Cloudless till 9 A. M. scattered ∩i till 5 P. M. cloudless afterwards.
8	142.0	..	N. & W.	Cloudless till 9 A. M. scattered ∩i till 5 P. M. cloudless afterwards.
9	*Sunday.*			
10	144.0	..	N. W. & W. & N.	Cloudless.
11	138.2	..	N. W.	Cloudless.
12	141.0	..	N. W. & W.	Cloudless.
13	140.6	..	N. W.	Cloudless.
14	139.7	..	N. W. & W. & S.	Cloudless.
15	139.0	..	N. W.	Cloudless.
16	*Sunday.*			
17	140.4	..	N. W.	Clouds of various kinds.
18	136.0	..	N. W.	Cloudless till 11 A. M. scattered ∩i till 4 P. M. cloudless afterwards.
19	133.0	..	N. W. & S. W.	Cloudless till 8 A. M. scattered \i & _i till 2 P. M. cloudy till 6 P. M. cloudless afterwards.
20	..	..	N.	Cloudless till 6 A. M. cloudy till 7 P. M. cloudless afterwards.
21	139.2	..	N. & N. E.	Cloudless till 6 A. M. scattered clouds of all kinds afterwards.
22	..	..	N. E.	Cloudy and slightly drizzling occasionally.
23	*Sunday.*			
24	..	..	N. E. & N.	Cloudy.
25	..	..	N. W. & N.	Cloudy till 8 P. M. cloudless afterwards.
26	128.0	..	N. W.	Cloudless till 3 A. M. cloudy till 6 A. M. cloudless till 10 A. M. scattered ∩i till 5 P. M. cloudless afterwards.
27	130.5	..	N. W. & W.	Cloudless.
28	135.0	..	W. & N. W.	Cloudless.
29	132.0	..	N. & W.	Cloudless.
30	*Sunday.*			

\i Cirri, _i Cirro strati, ∩i Cumuli, ∼i Cumulo strati, _i Nimbi, —i Strati, _ i Cirro cumuli.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of November, 1856.

Monthly Results.

	Inches.
Mean height of the Barometer for the month, ...	29.969
Max. height of the Barometer occurred at 9 A. M. on the 13th, ..	30.105
Min. height of the Barometer occurred at 3 P. M. on the 5th, ..	29.841
Extreme range of the Barometer during the month, ...	0.264

	o
Mean Dry Bulb Thermometer for the month, ...	75.2
Max. Temperature occurred at 1 P. M. on the 1st, ...	87.4
Min. Temperature occurred at 6 A. M. on the 28th, ...	61.9
Extreme range of the Temperature during the month, ...	25.5

	o
Mean Wet Bulb Thermometer for the month, ...	69.7
Mean Dry Bulb Thermometer above mean Wet Bulb Thermometer, ..	5.5
Computed Mean Dew-point for the month, ...	66.9
Mean Dry Bulb Thermometer above computed mean Dew-point, ..	8.3
	Inches.
Mean Elastic force of Vapour for the month, ...	0.657

	Troy grains.
Mean Weight of Vapour for the month, ...	7.16
Additional Weight of Vapour required for complete saturation, ..	2.21
Mean degree of humidity for the month, complete saturation being unity,	0.76

	Inches.
Slightly Drizzling 2 days, Max. fall of rain during 24 hours, ..	Nil.
Total amount of rain during the month, ...	Nil.
Prevailing direction of the Wind, ...	N. W. & N.

From Saturday the 22nd to Tuesday the 25th, it was cloudy day and night: the sun being scarcely once visible, also it was drizzling occasionally which rain was so small that it was not indicated by the Pluviometer. The readings of the Barometer were very steady during the four cloudy days in question.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of November, 1856.

Monthly Results.

Table showing the number of days on which at a given hour any particular wind blew, together with the number of days on which at the same hour when any particular wind was blowing it rained.

Hour.	N.	Rain on.	N. E.	Rain on.	E.	Rain on.	S. E.	Rain on.	S.	Rain on.	S. W.	Rain on.	W.	Rain on.	N. W.	Rain on.	Calm.	Rain on.
	No. of days.																	
Midnight.	7	1	1						1		1		6		7		2	
1	6		2						1		2		5		7		2	
2	7		1						1		2		3		8		1	
3	7		1						1		2		4		8		1	
4	7		2						1		2		5		7		1	
5	7		2						1		2		6		6		1	
6	8		2						1		2		6		7			
7	7		2						1		1		5		9			
8	8		3						1				4		9			
9	8		3						1				3		10			
10	8		4		1						1		3		8			
11	6		4	1	1				1		1		4		8			
Noon.	6		4		1		1				1		4		8			
1	6		3		1				1		1		6		7			
2	6		3	1					1		3		3		9			
3	3		2	1							2		7		11			
4	4		4								3		6		8			
5	4		3		1				1		1		6		9			
6	4		2		1				2		3		3		10			
7	3		1		1				4		3		3		9		1	
8	3		1		1				3		3		3		9		2	
9	3		2						2		4		4		8		2	
10	4		2						2		3		3		8		2	
11	3		2						2		3		4		9		2	

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of December, 1856.

Latitude 22° 33′ 1″ North. Longitude 88° 20′ 24″ East.

Height of the Cistern of the Standard Barometer above the Sea level, 18.11 feet.

Daily Means, &c. of the Observations and of the Hygrometrical elements dependent thereon.

Date.	Mean Height of the Barometer at 32° Fahr.	Range of the Barometer during the day.			Mean Dry Bulb Thermometer.	Range of the Temperature during the day.		
		Max.	Min.	Diff.		Max.	Min.	Diff.
	Inches.	Inches.	Inches.	Inches.	o	o	o	o
1	29.983	30.051	29.931	0.120	71.8	80.2	65.8	14.4
2	.980	.045	.928	.117	71.9	79.9	66.5	13.4
3	.991	.053	.937	.116	71.6	79.0	66.2	12.8
4	30.019	.086	.967	.119	71.4	80.2	65.0	15.2
5	.032	.095	.974	.121	71.9	80.8	65.3	15.5
6	.039	.109	.975	.134	71.3	79.9	64.6	15.3
7	*Sunday.*							
8	.053	.113	.993	.120	69.9	79.0	62.4	16.6
9	.067	.139	30.016	.123	69.7	77.0	64.0	13.0
10	.071	.141	.016	.125	69.8	75.2	66.1	9.1
11	.050	.125	29.988	.137	69.1	78.9	62.0	16.9
12	.052	.121	.987	.134	69.2	78.3	62.7	15.6
13	.070	.151	30.028	.123	68.0	78.4	60.7	17.7
14	*Sunday.*							
15	.015	.100	29.948	.152	67.5	77.5	59.8	17.7
16	29.987	.054	.922	.132	67.8	77.6	60.6	17.0
17	.998	.078	.942	.136	67.5	77.5	60.0	17.5
18	.985	.068	.937	.131	65.0	75.3	57.0	18.3
19	30.001	.070	.953	.117	65.2	76.0	56.9	19.1
20	.038	.125	.990	.135	64.6	75.4	56.4	19.0
21	*Sunday.*							
22	.083	.172	30.035	.137	65.5	75.0	59.4	15.6
23	.075	.146	29.999	.147	64.8	75.6	55.8	19.8
24	.029	.102	.957	.145	66.6	76.2	57.2	19.0
25	Xmas.							
26	.041	.103	.992	.111	69.6	80.6	61.6	19.0
27	.069	.151	30.007	.144	70.1	80.6	62.2	18.4
28	*Sunday.*							
29	29.966	.059	.916	.143	67.0	77.2	58.8	18.4
30	.984	.061	.927	.134	68.0	77.4	60.0	17.4
31	.973	.045	.906	.139	67.4	76.6	60.1	16.5

The Mean height of the Barometer, as likewise the Mean dry and wet Bulb Thermometers are derived from the twenty-four hourly Observations made during the day.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of December, 1856.

Daily Means, &c. of the Observations and of the Hygrometrical elements dependent thereon.

Date.	Mean Wet Bulb Thermometer.	Dry Bulb above Wet.	Computed Dew Point.	Dry Bulb above Dew Point.	Mean Elastic force of Vapour.	Mean Weight of Vapour in a Cubic foot of Air.	Additional weight of vapour required for complete saturation.	Mean degree of Humidity, complete saturation being unity.
	o	o	o	o	Inches.	T. gr.	T. gr.	
1	67.0	4.8	64.6	7.2	0.609	6.69	1.76	0.79
2	66.9	5.0	64.4	7.5	.605	.63	.85	.78
3	66.7	4.9	64.2	7.4	.601	.60	.80	.79
4	65.9	5.5	63.1	8.3	.580	.37	.98	.76
5	65.8	6.1	62.7	9.2	.572	.27	2.21	.74
6	65.3	6.0	62.3	9.0	.565	.20	.13	.74
7	*Sunday.*							
8	63.1	6.8	59.7	10.2	.518	5.70	.28	.71
9	64.3	5.4	61.6	8.1	.552	6.07	1.86	.77
10	64.3	5.5	61.5	8.3	.550	.06	.89	.76
11	63.3	5.8	60.4	8.7	.530	5.84	.94	.75
12	62.9	6.3	59.7	9.5	.518	.70	2.11	.73
13	61.5	6.5	57.6	10.4	.483	.33	.20	.71
14	*Sunday.*							
15	61.9	5.6	58.5	9.0	.498	.50	1.92	.74
16	62.3	5.5	59.0	8.8	.506	.59	.89	.75
17	61.9	5.6	58.5	9.0	.498	.50	.92	.74
18	59.0	6.0	55.4	9.6	.449	4.98	.89	.73
19	58.9	6.3	55.1	10.1	.444	.94	.97	.72
20	58.5	6.1	54.8	9.8	.440	.88	.90	.72
21	*Sunday.*							
22	58.7	6.8	54.6	10.9	.437	.85	2.13	.70
23	58.3	6.5	54.4	10.4	.434	.82	.01	.71
24	60.6	6.0	57.0	9.6	.473	5.23	1.98	.73
25	Xmas.							
26	63.3	6.3	60.1	9.5	.525	.77	2.13	.73
27	63.4	6.7	60.0	10.1	.523	.75	.28	.72
28	*Sunday.*							
29	62.2	4.8	59.3	7.7	.511	.65	1.65	.77
30	63.4	4.6	60.6	7.4	.534	.90	.63	.78
31	62.8	4.6	60.0	7.4	.523	.79	.60	.78

All the Hygrometrical elements are computed by the Greenwich constants.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of December, 1856.

Hourly Means, &c. of the Observations and of the Hygrometrical elements dependent thereon.

Hour.	Mean Height of the Barometer at 32° Fahr.	Range of the Barometer for each hour during the month.			Mean Dry Bulb Thermometer.	Range of the Temperature for each hour during the month.		
		Max.	Min.	Diff.		Max.	Min.	Diff.
	Inches.	Inches.	Inches.	Inches.	o	o	o	o
Midnight.	30.026	30.107	29.953	0.154	65.1	69.4	59.8	9.6
1	.024	.100	.954	.146	64.4	69.0	59.1	9.9
2	.015	.080	.955	.125	63.7	68.7	58.6	10.1
3	.007	.067	.952	.115	63.2	68.4	58.2	10.2
4	.005	.063	.954	.109	62.8	68.1	57.5	10.6
5	.011	.071	.959	.112	62.2	67.5	56.8	10.7
6	.031	.087	.969	.118	61.7	66.9	56.4	10.5
7	.053	.108	30.000	.108	61.5	66.6	55.8	10.8
8	.081	.139	.032	.107	63.6	68.5	56.8	11.7
9	.097	.165	.045	.120	67.1	72.8	61.0	11.8
10	.096	.172	.039	.133	70.0	75.2	64.4	10.8
11	.077	.143	.019	.124	72.6	77.0	68.4	8.6
Noon.	.043	.115	29.978	.137	74.9	79.1	71.8	7.3
1	.008	.073	.954	.119	76.7	80.4	73.6	6.8
2	29.986	.047	.930	.117	77.8	80.7	75.0	5.7
3	.972	.039	.910	.129	77.5	80.8	74.8	6.0
4	.971	.040	.906	.134	75.5	78.2	72.8	5.4
5	.979	.038	.920	.118	74.0	77.6	71.4	6.2
6	.989	.038	.920	.118	71.6	74.8	68.4	6.4
7	30.006	.068	.941	.127	69.9	73.1	66.0	7.1
8	.020	.086	.950	.136	68.6	71.8	64.3	7.5
9	.031	.098	.958	.140	67.5	71.4	62.0	9.4
10	.038	.107	.959	.148	66.6	70.2	61.2	9.0
11	.033	.110	.951	.159	65.8	69.8	60.4	9.4

The Mean height of the Barometer, as likewise the Mean dry and wet bulb Thermometers are derived from the Observations made at the several hours during the day.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of December, 1856.

Hourly Means, &c. of the Observations and of the Hygrometrical elements dependent thereon.

Hour.	Mean Wet Bulb Thermometer.	Dry Bulb above Wet.	Computed Dew Point.	Dry Bulb above Dew Point.	Mean Elastic force of Vapour.	Mean Weight of Vapour in a Cubic foot of Air.	Additional Weight of Vapour required for complete saturation.	Mean degree of Humidity, complete saturation being unity.
	°	°	°	°	Inches.	T. gr.	T. gr.	
Midnight.	61.4	3.7	59.2	5.9	0.509	5.66	1.23	0.82
1	60 9	3.5	58.4	6.0	.496	.51	.23	.82
2	60.3	3.4	57.9	5.8	.488	.42	.17	.82
3	59 9	3.3	57.6	5.6	.483	.37	.12	.83
4	59.7	3.1	57.5	5.3	.481	.38	.03	.84
5	59.2	3.0	57.1	5.1	.475	.31	0.98	.84
6	58.8	2 9	56.8	4.9	.470	.26	.93	.85
7	58.8	2.7	56.9	4 6	.472	.27	.89	.86
8	60.0	3.6	57.5	6.1	.481	.36	1.21	.82
9	61.9	5.2	58.8	8.3	.503	.56	.76	.76
10	63.5	6.5	60.2	9.8	.527	.79	2.21	.72
11	65.0	7.6	61.2	11.4	.544	.97	.69	.69
Noon.	65.8	9.1	61.2	13.7	.544	.93	3.35	.64
1	66 4	10.3	61.2	15.5	.544	.90	.90	.60
2	66.6	11 2	61.0	16.8	.541	.85	4.28	.58
3	66.2	11.3	60.5	17.0	.532	.77	.27	.58
4	65.1	10.4	59.9	15.6	.521	.66	3.80	.60
5	65 2	8.8	60.8	13.2	.537	.86	.18	.65
6	65.4	6.2	62.3	9.3	.565	6.20	2.20	.74
7	64.7	5.2	62.1	7.8	.561	.17	1.81	.77
8	64.0	4 6	61.7	6.9	.554	.10	.57	.80
9	63.3	4 2	60.8	6.7	.537	5.94	.48	.80
10	62.6	4.0	60.2	6.4	.527	.84	.37	.81
11	61.9	3.9	59.6	6.2	.516	.73	.31	.81

All the Hygrometrical elements are computed by the Greenwich constants.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of December, 1856.

Solar Radiation, Weather, &c.

Date.	Max. Solar radiation.	Rain Gauge 5 feet above Ground.	Prevailing direction of the Wind.	General Aspect of the Sky.
	o	Inches.		
1	135.0	..	N. W. & N.	Cloudless till 10 A. M. scattered ⌒i till 5 P. M. cloudless afterwards.
2	130.5	..	N. W. & N.	Cloudless till 11 A. M. scattered ⌒i till 6 P. M. cloudless afterwards.
3	132.0	..	S. W. & N. W.	Cloudless till 10 A. M. scattered ⌒i & ⌣i till 6 P. M. cloudless & foggy afterwards.
4	140.0	..	N. W. & N. & S. W.	Cloudless till 11 A. M. scattered ⌣i & ⌒i till 9 P. M. cloudless afterwards.
5	136.0	..	N. W. & N.	Cloudless till 11 A. M. scattered ⌒i & ⌣i till 5 P. M. cloudless afterwards.
6	133.4	..	N. W. & N.	Cloudless till 11 A. M. scattered ⌒i till 3 P. M. cloudless afterwards.
7	*Sunday.*			
8	133.4	..	N. W. & N.	Cloudless till 1 P. M. scattered clouds
9	..	..	N.	Cloudy. [afterwards.
10	..	..	N. W. & N.	Cloudy.
11	136.5	..	N. W. & W.	Scattered ⌣i. [wards.
12	132.0	..	N.	Scattered ⌣i till 3 A. M. cloudless after-
13	133.2	..	N.	Cloudless.
14	*Sunday.*			[7 P. M. cloudless afterwards.
15	134.0	..	N.	Cloudless till 3 P. M. scattered ⌣i till
16	130.2	..	N. W.	Cloudless.
17	135.0	..	N. W. & N. & N. E.	Cloudless, also foggy before sunrise.
18	131.6	..	N. & N. W.	Cloudless.
19	132.0	..	N. W. & N.	Cloudless.
20	133.0	..	N. W. & N.	Cloudless.
21	*Sunday.*			[8 A. M. cloudless afterwards.
22	131.0	..	N. & N. W.	Cloudless till 2 A. M. scattered ⌣i till
23	126.5	..	N. W.	Cloudless.
24	129.8	..	N. & N. W.	Cloudless.
25	Xmas.			
26	134.3	..	N. W.	Cloudless.
27	135.6	..	N. W. & N.	Cloudless.
28	*Sunday.*			
29	135.0	..	Variable.	Cloudless.
30	132.0	..	Calm & N. W.	Cloudless till 11 A. M. scattered ⌣i till 4 P. M. cloudless afterwards.
31	131.0	..	Calm & W.	Cloudless till 6 A. M. scattered ⌒i & ⌣i till 8 P. M. cloudless afterwards.

⌒i Cirri, ⌣i Cirro strati, ⌒i Cumuli, ⌒i Cumulo strati, ⌣i Nimbi, —i Stra ⌣i Cirro cumuli.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of December, 1856.

Monthly Results.

	Inches.
Mean height of the Barometer for the month, ...	30.025
Max. height of the Barometer occurred at 10 A. M. on the 22nd, ..	30.172
Min. height of the Barometer occurred at 4 P. M. on the 31st, ..	29.906
Extreme range of the Barometer during the month, ...	0.266

	°
Mean Dry Bulb Thermometer for the month, ...	68.5
Max. Temperature occurred at 3 P. M. on the 5th, ...	80.8
Min. Temperature occurred at 7 A. M. on the 23rd, ...	55.8
Extreme range of the Temperature during the month, ...	25.0

	°
Mean Wet Bulb Thermometer for the month, ...	62.8
Mean Dry Bulb Thermometer above mean Wet Bulb Thermometer, .	5.7
Computed Mean Dew-point for the month, ...	59.9
Mean Dry Bulb Thermometer above computed mean Dew-point, ..	8.6
	Inches.
Mean Elastic force of Vapour for the month, ...	0.521

	Troy grains.
Mean Weight of Vapour for the month, ...	5.74
Additional Weight of Vapour required for complete saturation, ..	1.91
Mean degree of humidity for the month, complete saturation being unity,	0.75

	Inches.
Rained No. Max. fall of rain during 24 hours, ...	Nil.
Total amount of rain during the month, ...	Nil.

Prevailing direction of the Wind, N. W. & N.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of December, 1856.

Monthly Results.

Table showing the number of days on which at a given hour any particular wind blew, together with the number of days on which at the same hour when any particular wind was blowing it rained.

Hour.	N.	Rain on.	N. E.	Rain on.	E.	Rain on.	S. E.	Rain on.	S.	Rain on.	S. W.	Rain on.	W.	Rain on.	N. W.	Rain on.	Calm.	Rain on.
							No. of days.											
Mid-night.	9										1		2		9		5	
1	8										1		2		10		5	
2	8		1								1		2		9		5	
3	10		1								1		2		9		3	
4	10		1								1		1		9		3	
5	10		1								1		1		10		2	
6	10		2								1		1		10		2	
7	8		3		1								1		12		1	
8	12		2										1		11			
9	10		2												14			
10	11		2												13			
11	10		1		1				1						13			
Noon.	9				1						1		1		14			
1	7												2		17			
2	8								1		1		2		14			
3	8										3		1		14			
4	12										2		2		10			
5	9										2		1		14			
6	10										3		1		12			
7	9										2		1		13			
8	9						1				2		1		13			
9	11						1				1		2		11			
10	11						1				1		1		12			
11	11						1				1		1		11		1	

Meteorological Register kept at the Office of the Secretary to Government, N. W. P., Agra, for the month of September, 1856.

Maximum pressure observed at 9.50 A. M.

Date.	Barometer.	Temperature.			Direction of Wind.	Quantity of Rain.	Aspect of the Sky.
		Of Mercury.	Of Air.	Wet Bulb.			
1	29.135	85.9	86.0	82.6	S. W.	...	⌇ scattered.
2	29.093	83.2	83.5	80.5	N. W.	...	„ ditto.
3	29.131	84.5	85.0	80.0	N. W.	0.12	„ all over.
4	29.205	84.9	85.0	78.9	N. W.	...	„ scattered.
5	29.179	82.5	83.5	80.5	N. E.	0.62	„ all over.
6	29.053	78.1	78.5	77.0	N. W.	...	„ ditto.
7	29.105	77.5	78.1	76.7	N. W.	...	„ ditto.
8	29.329	83.9	84.4	77.5	N. W.	...	⌒ scattered in zenith.
9	29.339	84.9	84.9	76.9	N. W.	...	Clear.
10	29.285	84.8	84.9	75.0	N. W.	...	Ditto.
11	29.323	84.8	85.0	76.0	N. W.	...	⌣ scattered in zenith.
12	29.345	85.5	85.5	76.0	N. W.	...	Clear.
13	29.389	86.9	87.4	75.9	N. W.	...	Ditto.
14	29.401	89.5	89.7	81.0	N. W.	...	⌇ scattered.
15	29.381	88.9	88.5	81.2	N. E.	..	„ ditto.
16	29.271	88.9	88.5	81.9	N. E.	...	„ ditto.
17	29.271	88.9	88.5	80.2	N. E.	...	„ ditto.
18	29.329	91.0	91.0	82.6	N. W.	...	„ ditto.
19	29.341	87.0	87.5	79.0	S. E.	...	„ ditto.
20	29.335	85.7	85.0	76.9	E.	...	⌣ scattered.
21	29.343	84.0	84.3	77.5	S. E.	...	⌇ all over.
22	29.337	84.2	85.0	78.5	S.	1.72	⌒ scattered.
23	29.381	83.5	84.0	79.0	S.	0.40	⌇ ditto.
24	29.369	82.9	83.9	76.5	N. W.	...	⌒ ditto in zenith.
25	29.329	84.9	85.0	78.0	N. W.	...	⌒ scattered.
26	29.373	85.9	85.9	74.5	W.	...	Clear.
27	29.399	85.9	86.0	74.5	S. W.	...	Ditto.
28	29.405	86.0	85.5	74.2	N. W.	...	Ditto.
29	29.413	86.5	87.2	74.5	N. W.	...	Ditto.
30	29.453	86.9	87.4	77.0	N. W.	...	Ditto.
Mean.	29.301	84.9	85.5	78.0			

NOTE.—The dry bulb and maximum Register do not agree; the former always reads more than the latter. The average difference is 1.6.

Meteorological Register kept at the Office of the Secretary to Government, N. W. P., Agra, for the month of September, 1856.

Observations at apparent Noon.

Date.	Barometer.	Temperature.			Direction of Wind.	Quantity of Rain.	Aspect of the Sky.
		Of Mercury.	Of Air.	Wet Bulb.			
1	29.091	87.7	88.0	82.5	S. W.	...	~ scattered.
2	29.067	86.0	86.5	80.5	N. W.	...	„ ditto.
3	29.105	85.5	86.0	80.5	N. W.	...	„ all over.
4	29.215	87.9	88.0	80.0	N. W.	...	„ scattered.
5	29.141	84.0	84.4	79.5	N. E.	...	„ all over.
6	29.037	78.9	78.4	77.4	W.	...	„ ditto.
7	29.089	78.5	78.8	77.5	N. W.	0.10	„ ditto.
8	29.311	86.0	86.5	78.5	N. W.	...	~ scattered in zenith.
9	29.323	86.9	86.9	77.9	N. W.	...	~ ditto.
10	29.271	86.0	86.4	76.9	N. W.	...	Clear.
11	29.325	87.0	87.5	76.2	N. W.	...	~ scattered in zenith.
12	29.327	88.0	88.9	76.6	N. W.	...	Clear.
13	29.371	89.0	89.9	76.0	N. W.	...	Ditto.
14	29.381	91.5	91.5	82.0	N. W.	...	~ scattered.
15	29.345	90.2	90.9	80.5	N. W.	...	„ ditto.
16	29.233	90.9	91.9	81.9	N. E.	...	„ ditto.
17	29.253	90.5	90.2	81.5	N. E.	...	„ ditto.
18	29.273	91.2	91.8	81.0	N. W.	...	„ ditto.
19	29.331	88.2	88.5	78.9	S. E.	...	„ ditto.
20	29.311	85.0	84.0	76.5	E.	...	„ all over.
21	29.309	86.0	86.5	78.5	S. E.	...	„ scattered.
22	29.229	86.5	87.5	80.2	S. E.	...	~ all over.
23	29.347	85.0	85.5	79.9	S.	...	~ scattered.
24	29.339	85.1	85.1	77.0	N. W.	...	~ ditto all over.
25	29.209	86.8	87.0	78.0	N. W.	...	~ scattered.
26	29.355	87.9	88.5	73.9	N. W.	...	Clear.
27	29.377	87.8	88.5	72.9	N. W.	...	Ditto.
28	29.389	88.2	88.6	74.5	N. W.	...	Ditto.
29	29.397	88.9	88.5	73.2	N. W.	...	Ditto.
30	29.431	88.0	89.0	76.9	N. W.	...	Ditto.
Mean.	29.272	86.9	87.3	78.2			

Meteorological Register kept at the Office of the Secretary to Government, N. W. P., Agra, for the month of September, 1856.

Minimum pressure observed at 4 P. M.

Date.	Barometer.	Temperature.			Maximum and Minimum.			Aspect of the Sky.	Direction of Wind.	Quantity of Rain.
		Of Mercury.	Of Air.	Wet Bulb.	Maximum.	Minimum.	Mean.			
1	29.017	82.0	81.0	79.1	88.0	78.5	83.25	⌇ all over.	S. E.	0.79
2	28.997	89.4	89.0	82.0	89.5	77.0	83.25	,, scattered.	N. W.	..
3	29.057	89.0	89.5	82.0	89.5	76.9	83.2	,, ditto.	N. W.	..
4	29.189	81.9	81.5	78.9	90.0	76.9	83.45	,, all over.	N. E.	0.12
5	29.063	80.9	80.9	78.6	82.0	77.0	79.5	,, ditto.	E.	0.14
6	29.001	80.9	80.5	78.5	80.5	75.0	77.75	,, ditto.	N. W.	0.4
7	29.039	88.0	88.8	79.0	80.5	75.5	78.0	,, scattered.	N. W.	..
8	29.267	90.5	89.5	80.4	89.5	75.5	82.5	,, ditto.	N. W.	..
9	29.255	90.9	90.0	78.5	90.0	75.8	82.9	Clear.	N. W.	..
10	29.217	88.8	87.2	77.5	89.5	74.9	82.2	⌇ all over.	N. W.	..
11	29.215	90.0	89.0	77.9	91.0	76.5	83.25	,, scatteredin zen.	N. W.	..
12	29.275	92.5	91.5	76.5	92.0	75.5	83.75	Clear.	N. W.	..
13	29.319	94.1	93.2	75.4	93.5	75.5	84.5	Ditto.	N. W.	..
14	29.303	95.0	94.9	83.0	94.9	79.0	86.95	⌇ scattered.	N. W.	..
15	29.237	93.8	92.5	81.5	94.0	79.8	86.9	,, ditto.	N. E.	..
16	29.143	93.5	93.9	81.6	94.8	79.5	87.15	,, ditto.	N. E.	..
17	29.173	90.0	89.0	81.2	92.0	79.9	85.95	,, all over.	S. E.	..
18	29.235	91.1	90.5	82.4	93.1	82.0	87.55	,, ditto.	N.	..
19	29.275	91.5	89.4	78.9	89.5	77.9	83.7	,, scattered above	S. E.	..
20	29.233	82.9	82.0	77.5	86.0	77.9	81.95	,, all over. [hor.	E.	..
21	29.229	89.0	88.9	80.5	89.2	75.0	82.1	,, scattered.	S. E.	..
22	29.237	88.0	87.5	79.0	88.5	75.6	82.05	⌒ all over.	S. E.	..
23	29.289	87.2	87.5	79.8	87.8	74.9	81.35	⌇ scattered.	N. E.	..
24	29.263	89.0	88.4	77.4	88.0	76.8	82.4	⌒ ditto all over.	N. W.	..
25	29.237	90.9	90.9	78.0	90.0	77.0	83.5	Clear.	N. W.	..
26	29.291	91.2	91.0	76.1	91.2	76.5	83.85	Ditto.	N. W.	..
27	29.337	91.9	91.0	74.6	91.0	75.8	83.4	Ditto.	N. W.	..
28	29.309	91.5	91.0	75.5	91.2	75.0	83.1	Ditto.	N. W.	..
22	29.331	92.5	91.9	71.1	92.0	74.0	83.0	Ditto.	N. W.	..
30	29.359	92.8	91.5	74.0	92.5	77.0	84.75	Ditto.	N. W.	..
Mean.	29.214	89.3	88.7	78 5	89.8	76.8	83.30			

Meteorological Register kept at the Office of the Secretary to Government, N. W. P., Agra, for the month of October, 1856.

Maximum pressure observed at 9.50 A. M.

Date.	Barometer.	Temperature.			Direction of Wind.	Quantity of Rain.	Aspect of the Sky.
		Of Mercury.	Of Air.	Wet Bulb.			
1	29.465	85.5	85.5	76.0	N. E.	...	Clear.
2	29.439	84.8	85.1	73.0	N. W.	...	Ditto.
3	29.425	83.9	84.5	74.0	N. W.	...	Ditto.
4	29.383	84.9	86.0	72.0	N. W.	...	Ditto.
5	29.386	85.0	86.0	70.0	N. W.	...	Ditto.
6	29.389	85.0	86.5	68.0	N. W.	...	Ditto.
7	29.401	85.9	86.6	71.4	S. E.	...	Ditto.
8	29.415	88.0	89.4	70.0	N.	...	Ditto.
9	29.405	86.0	86.7	70.0	N. E.	...	Ditto.
10	29.393	84.0	85.0	69.0	N. W.	...	Ditto.
11	29.341	82.8	84.0	66.0	N. W.	...	Ditto.
12	29.285	82.5	83.6	64.5	N. W.	...	Ditto.
13	29.343	83.0	84.9	69.4	S. E.	...	Ditto.
14	29.417	83.2	83.9	65.5	W.	...	Ditto.
15	29.471	81.9	83.0	68.0	N. W.	...	Ditto.
16	29.505	82.0	84.4	66.4	N. W.	...	Ditto.
17	29.485	83.9	84.9	69.5	N. W.	...	Ditto.
18	29.479	83.4	84.4	66.2	N. W.	...	Ditto.
19	29.426	83.7	84.5	66.6	N. W.	...	Ditto.
20	29.373	84.8	85.0	67.0	W.	...	Ditto.
21	29.419	82.0	85.5	65.0	N. W.	...	Ditto.
22	29.441	79.1	80.2	63.0	W.	...	Ditto.
23	29.449	77.1	79.2	60.0	W.	...	Ditto.
24	29.469	78.0	78.8	60.0	W.	...	Ditto.
25	29.511	76.8	78.5	60.5	N. W.	...	Ditto.
26	29.523	77.6	79.0	62.7	N. W.	...	Ditto.
27	29.535	77.5	79.4	65.0	N. W.	...	Ditto.
28	29.559	80.0	81.2	64.9	W.	...	Ditto.
29	29.523	78.5	80.4	64.5	N. W.	...	Ditto.
30	29.475	77.1	79.4	65.0	N. W.	...	Ditto.
31	29.531	77.9	80.5	66.4	N. W.	...	Ditto.
Mean.	29.440	82.1	83.4	67.0			

NOTE.—The dry bulb and Maximum Register do not agree; the former always reads more than the latter. The average difference is 1.6.

Meteorological Register kept at the Office of the Secretary to Government, N. W. P., Agra, for the month of October, 1856.

Observations at Apparent Noon.

Date.	Barometer.	Temperature.			Direction of Wind.	Quantity of Rain.	Aspect of the Sky.
		Of Mercury.	Of Air.	Wet Bulb.			
1	29.445	87.1	88.0	74.9	N. E.	...	Clear.
2	29.409	88.0	89.0	73.6	N. W.	...	Ditto.
3	29.399	87.9	88.9	71.5	N. W.	...	Ditto.
4	29.367	89.2	90.5	70.5	N. W.	...	Ditto.
5	29.357	88.5	89.6	70.5	N. W.	...	Ditto.
6	29.363	89.0	90.5	68.5	N. W.	...	Ditto.
7	29.387	90.0	90.0	69.0	N. E.	...	Ditto.
8	29.391	89.9	90.5	70.0	N.	...	Ditto.
9	29.385	87.5	88.0	70.6	N. E.	...	Ditto.
10	29.369	88.6	89.0	68.4	N. W.	...	Ditto.
11	29.309	88.0	89.0	66.4	N. W.	...	\ scattered.
12	29.259	85.5	86.9	65.0	N. W.	...	Clear.
13	29.325	85.0	88.0	68.5	S. W.	...	Ditto.
14	29.393	87.2	88.0	66.0	W.	...	Ditto.
15	29.447	86.8	87.5	67.5	N. W.	...	Ditto.
16	29.475	85.5	87.9	66.9	N. W.	...	Ditto.
17	29.459	87.0	88.0	69.9	N. W.	...	Ditto.
18	29.439	86.0	87.4	67.4	N. W.	...	Ditto.
19	29.405	85.0	86.4	67.2	N. W.	...	Ditto.
20	29.345	85.8	86.5	67.6	W.	...	Ditto.
21	29.397	85.0	86.5	65.4	N. W.	...	Ditto.
22	29.417	82.9	83.2	64.5	W.	...	Ditto.
23	29.415	82.9	84.0	60.5	W.	...	Ditto.
24	29.455	81.1	83.0	61.2	W.	...	Ditto.
25	29.481	80.1	81.9	60.9	N. W.	...	Ditto.
26	29.493	81.5	83.1	63.4	N. W.	...	Ditto.
27	29.505	82.9	84.4	66.0	N. W.	...	Ditto.
28	29.527	85.0	86.0	64.4	N. W.	...	Ditto.
29	29.489	83.9	85.5	64.9	N. W.	...	Ditto.
30	29.443	84.5	86.0	65.5	N. W.	...	Ditto.
31	29.505	81.5	83.9	66.6	N. W.	...	Ditto.
Mean.	29.414	85.7	87.0	67.2			

Meteorological Register kept at the Office of the Secretary to Government, N. W. P., Agra, for the month of October, 1856.

Minimum pressure observed at 4 P. M.

Date.	Barometer.	Temperature.			Maximum and Minimum.			Aspect of the Sky.	Direction of Wind.	Quantity of Rain.
		Of Mercury.	Of Air.	Wet Bulb.	Maximum.	Minimum.	Mean.			
1	29.365	92.5	92.4	75.4	92.6	76.0	84.3	Clear.	N.	...
2	29.355	93.0	93.0	73.5	92.5	72.9	82.7	Ditto.	N. W.	...
3	29.335	93.0	92.5	72.0	92.5	72.5	82.5	Ditto.	N. W.	...
4	29.305	93.9	93.2	71.5	93.5	71.5	82.5	Ditto.	N. W.	...
5	29.315	94.5	93.8	93.8	94.0	70.5	82.25	Ditto.	N. W.	..
6	29.315	94.5	93.3	70.5	94.0	69.9	81.95	Ditto.	N. W.	...
7	29.223	94.5	93.0	72.3	93.0	71.0	82.0	Ditto.	N. E.	...
8	29.355	95.0	94.0	72.0	94.0	75.9	84.95	Ditto.	N.	...
9	29.307	94.0	94.0	71.0	94.0	74.0	84.0	Ditto.	N. E.	...
10	29.283	94.9	96.0	72.0	96.7	69.0	82.85	Ditto.	N. W.	...
11	29.223	90.9	90.0	69.5	90.5	67.0	78.75	\ scattered.	N. W.	...
12	29.205	90.8	89.5	66.8	90.0	66.0	78.0	Clear.	N. W.	...
13	29.287	92.0	91.5	72.9	91.0	67.5	79.25	Ditto.	S. W.	...
14	29.353	91.0	90.0	70.0	91.1	68.5	79.8	Ditto.	N. W.	...
15	29.405	91.0	90.5	70.0	91.0	71.0	81.0	Ditto.	N. W.	...
16	29.425	89.9	89.9	69.4	89.5	67.9	78.7	Ditto.	W.	...
17	29.412	91.0	90.5	71.0	91.0	70.5	80.75	Ditto.	N. W.	...
18	29.381	92.0	91.5	67.9	92.0	69.5	80.75	Ditto.	N. W.	...
19	29.355	90.0	91.5	69.4	91.5	65.5	78.5	Ditto.	N. W.	...
20	29.313	90.0	89.9	68.9	89.5	65.0	77.25	Ditto.	N. W.	...
21	29.373	89.5	89.0	67.5	90.0	65.0	77.5	Ditto.	N. W.	...
22	29.381	87.8	86.9	64.0	88.0	66.0	77.0	Ditto.	N.	...
23	29.397	85.4	85.4	62.4	86.0	61.5	73.75	Ditto.	N.	...
24	29.423	85.5	85.4	61.0	86.1	61.0	73.55	Ditto.	W.	...
25	29.437	85.0	84.4	63.0	85.5	61.0	73.25	Ditto.	N. W.	...
26	29.449	86.4	86.4	63.5	87.0	62.0	74.5	Ditto.	N. W.	...
27	29.461	87.9	87.6	65.0	88.0	62.5	75.25	Ditto.	N. W.	...
28	29.475	88.8	88.5	66.1	90.0	64.8	77.4	Ditto.	N. W.	...
29	29.437	88.9	88.5	65.1	90.0	62.8	76.4	Ditto.	N. W.	...
30	29.407	88.0	87.5	67.4	89.1	61.9	75.5	Ditto.	N. W.	...
31	29.471	85.9	86.0	69.9	86.0	63.9	74.95	Ditto.	N. W.	...
Mean.	29.362	90.5	90.1	69.5	90.6	67.5	79.09			

Meteorological Register kept at the Office of the Secretary to Government, N. W. P. Agra, for the month of November, 1856.

Maximum pressure observed at 9.50 A. M.

Date.	Barometer.	Temperature.			Direction of Wind.	Quantity of Rain.	Aspect of the Sky.
		Of Mercury.	Of Air.	Wet Bulb.			
1	29.585	80.5	81.9	72.5	N. E.	...	Clear.
2	29.575	81.6	81.5	71.0	S.	...	Ditto.
3	29.569	82.8	84.0	73.0	S.	...	Ditto.
4	29.533	82.0	83.4	71.9	N. W.	...	Ditto.
5	29.529	81.0	82.0	68.6	N. W.	...	Ditto.
6	29.555	77.0	78.5	65.0	W.	...	Ditto.
7	29.573	78.1	79.0	64.9	W.	...	Ditto.
8	29.547	74.5	75.3	60.4	W.	...	Ditto.
9	29.583	72.8	73.4	58.2	N. W.	...	Ditto.
10	29.621	71.0	71.5	56.0	W.	...	Ditto.
11	29.611	70.0	70.5	57.4	W.	...	Ditto.
12	29.585	70.9	73.5	58.4	S.	...	Ditto.
13	29.641	72.9	73.5	60.0	N.	...	Ditto.
14	29.631	73.0	74.0	60.5	S. E.	...	Ditto.
15	29.609	74.0	75.0	61.9	S.	...	Ditto.
16	29.611	73.9	74.8	61.7	S. W.	...	Ditto.
17	29.611	73.9	74.5	62.5	S. W.	...	⌐ scattered towards [hor.
18	29.603	74.9	75.5	62.0	S.	...	Clear.
19	29.555	69.0	70.0	58.0	W.	...	Ditto.
20	29.593	66.2	67.9	54.0	N.	...	Ditto.
21	29.595	65.0	66.5	55.0	N.	...	⌐ scattered.
22	29.577	65.0	67.5	53.5	N.	...	Ditto.
23	29.593	66.8	68.4	58.0	N. E.	...	⌐ all over.
24	29.609	68.5	69.2	62.5	S. E.	...	Clear.
25	29.647	67.0	68.0	54.5	N. E.	...	Ditto.
26	29.617	65.9	67.0	54.0	N.	...	Ditto.
27	29.567	66.1	68.0	54.5	W.	...	Ditto.
28	29.535	67.0	69.0	56.0	W.	...	Ditto.
29	29.549	68.5	70.5	58.0	W.	...	Ditto.
30	29.585	69.9	71.5	62.0	S.	...	Ditto.
Mean.	29.584	72.3	73.5	60.8			

NOTE.—The dry bulb and Maximum Register do not agree; the former always reads more than the latter. The average difference is 1.6.

Meteorological Register kept at the Office of the Secretary to Government, N. W. P. Agra, for the month of November, 1856.

Observations at apparent Noon.

Date.	Barometer.	Temperature.			Direction of Wind.	Quantity of Rain.	Aspect of the Sky.
		Of Mercury.	Of Air.	Wet Bulb.			
1	29.449	82.5	83.9	71.5	N. E.	...	Clear.
2	29.541	82.9	83.9	71.5	S.	...	Ditto.
3	29.533	84.0	85.0	72.0	S. W.	...	Ditto.
4	29.501	85.0	86.4	71.9	N. W.	...	Ditto.
5	29.505	84.0	85.0	68.6	N. W.	...	Ditto.
6	29.531	81.5	83.5	65.4	W.	...	Ditto.
7	29.541	81.0	83.0	65.5	W.	...	Ditto.
8	29.515	76.4	77.5	61.0	W.	...	Ditto.
9	29.551	74.5	76.6	58.8	N. W.	...	Ditto.
10	29.587	73.0	75.0	56.5	W.	...	Ditto.
11	29.573	74.9	76.0	57.9	W.	...	Ditto.
12	29.575	74.0	76.4	59.5	S.	...	Ditto.
13	29.609	75.3	76.8	60.5	N.	...	Ditto.
14	29.589	76.0	77.0	62.0	S. E.	...	Ditto.
15	29.581	77.8	78.5	62.5	S. W.	...	Ditto.
16	29.593	75.9	76.9	62.5	S. W.	...	Ditto.
17	29.573	77.9	79.0	63.2	S. W.	...	⌣ scattered.
18	29.571	77.9	79.0	62.5	S.	...	Clear.
19	29.533	74.6	75.9	60.0	N. W.	...	Ditto.
20	29.563	71.0	72.5	54.4	N.	...	Ditto.
21	29.561	68.5	70.5	56.0	N.	...	⌣ scattered.
22	29.543	69.9	72.0	53.6	N. E.	...	Ditto.
23	29.555	68.5	69.5	59.0	N. E.	...	⌣ all over.
24	29.571	71.0	72.0	63.4	E.	...	∩ scattered.
25	29.617	71.9	72.5	56.5	N. W.	...	Clear.
26	29.563	72.0	72.5	54.5	W.	...	Ditto.
27	29.525	71.9	73.4	55.5	W.	...	Ditto.
28	29.501	71.9	74.9	58.4	W.	...	Ditto.
29	29.529	72.8	74.5	59.0	S. E.	...	Ditto.
30	29.513	73.5	75.0	63.5	S.	...	Ditto.
Mean.	29.549	75.7	77.1	61.5			

Meteorological Register kept at the Office of the Secretary to Government, N. W. P. Agra, for the month of November, 1856.

Maximum pressure observed at 4 P. M.

Date.	Barometer.	Temperature.			Maximum and Minimum.			Aspect of the Sky.	Direction of Wind.	Quantity of Rain.
		Of Mercury.	Of Air.	Wet Bulb.	Maximum.	Minimum.	Mean.			
1	29.489	86.2	86.4	71.0	87.0	70.3	78.65	Clear.	N. E.	...
2	29.467	88.9	89.4	72.8	89.5	70.0	79.75	Ditto.	W.	...
3	29.483	87.0	87.0	73.9	87.5	73.0	80.25	Ditto.	W.	...
4	29.433	89.9	89.0	72.1	90.0	71.5	80.75	∼ ditto.	E.	...
5	29.469	88.5	87.5	66.5	89.0	70.0	79.5	Ditto.	N. W.	...
6	29.495	87.1	87.4	66.4	87.1	62.0	74.55	Ditto.	W.	...
7	29.489	84.0	85.0	70.5	86.0	65.0	75.5	Ditto.	W.	...
8	29.485	80.1	80.5	63.0	81.0	64.1	72.55	Ditto.	W.	...
9	29.505	77.5	78.0	60.0	79.0	62.0	70.5	Ditto.	N. W.	...
10	29.545	80.0	80.0	58.5	80.0	57.8	68.9	Ditto.	W.	...
11	29.527	80.2	80.4	59.4	81.0	57.0	69.0	Ditto.	N. W.	...
12	29.547	79.9	79.9	62.4	81.9	56.9	69.4	Ditto.	N. W.	...
13	29.553	78.9	78.5	64.0	79.5	59.5	69.5	Ditto.	N.	...
14	29.535	79.8	79.4	64.4	80.2	61.9	71.05	Ditto.	S. E.	...
15	29.531	80.8	80.4	63.5	81.1	61.0	71.05	Ditto.	S. W.	...
16	29.513	81.9	81.5	64.5	83.0	62.0	72.5	⌣ scattered.	S. W.	...
17	29.513	81.9	81.0	65.5	83.1	62.0	72.55	Ditto.	S. W.	...
18	29.515	81.9	81.9	64.0	82.5	61.0	71.75	Ditto.	W.	...
19	29.503	80.9	81.0	59.5	82.5	57.8	70.15	Ditto.	N. W.	...
20	28.505	76.0	75.9	57.0	76.5	51.5	64.0	Ditto.	N.	...
21	29.511	74.9	75.0	56.5	76.0	47.9	61.95	Ditto.	N.	...
22	29.571	73.0	73.0	54.4	74.5	49.0	61.75	Ditto.	N. E.	...
23	29.465	70.0	71.0	61.0	71.1	52.8	61.95	⌣ all over.	N. E.	...
24	29.529	74.0	74.0	62.5	74.0	58.9	66.45	∼ scattered.	E.	...
25	29.567	76.5	75.5	59.0	78.0	55.5	66.75	Clear.	N. W.	...
26	29.525	75.5	75.1	55.6	76.0	50.0	63.0	Ditto.	W.	...
27	29.479	76.9	76.5	58.5	78.0	50.0	64.0	Ditto.	W.	...
28	29.465	79.0	78.9	58.4	81.0	53.5	67.25	Ditto.	W.	...
29	29.487	79.9	80.0	60.5	80.5	52.5	66.5	Ditto.	S. W.	...
30	29.483	79.0	79.0	65.0	79.5	55.5	67.5	Ditto.	S.	...
Mean.	**29.506**	**80.3**	**80.2**	**63.0**	**81.2**	**59.4**	**70.29**			

Meteorological Register kept at the Office of the Secretary to Government, N. W. P., Agra, for the month of December, 1856.

Maximum pressure observed at 9.50 A. M.

Date.	Barometer.	Temperature.			Direction of Wind.	Quantity of Rain.	Aspect of the Sky.
		Of Mercury.	Of Air.	Wet Bulb.			
1	29.599	69.5	71.8	61.0	S.	..	Clear.
2	29.585	69.5	71.0	61.0	S.	..	Ditto. [S. E.
3	29.561	68.9	70.4	62.0	S. E.	..	∼ scattered towards
4	29.655	65.0	65.5	59.5	N. E.	..	Clear.
5	29.673	64.4	65.5	56.3	N.	..	Ditto.
6	29.691	63.8	65.5	54.0	N.	..	Ditto.
7	29.661	63.0	64.8	52.0	N. W.	..	Ditto.
8	29.673	58.9	60.0	49.0	W.	..	Ditto.
9	29.695	60.9	62.4	51.0	S. W.	..	Ditto.
10	29.695	58.9	61.0	50.6	W.	..	Ditto.
11	29.667	59.8	61.5	53.2	N.	..	Ditto.
12	29.633	61.0	62.9	51.9	N.	..	Ditto.
13	29.665	62.9	64.0	54.5	N. E.	..	Ditto.
14	29.639	63.0	64.5	54.5	N. E.	..	⌣ all over.
15	29.611	61.0	62.4	53.5	N. E.	..	Clear.
16	29.597	59.0	60.4	53.0	N. E.	..	Ditto.
17	29.605	58.9	60.5	53.9	N. W.	..	Ditto.
18	29.557	59.0	61.0	54.0	N. W.	..	Ditto.
19	29.587	60.2	62.0	52.5	N. E.	..	Ditto.
20	29.643	59.0	60.0	52.5	W.	..	Ditto.
21	29.605	60.0	61.4	49.5	W.	..	Ditto.
22	29.693	58.0	60.0	49.0	N.	..	Ditto.
23	29.617	56.0	57.5	48.0	N.	..	Ditto.
24	29.657	58.0	60.1	47.5	W.	..	Ditto.
25	29.595	60.0	62.2	52.8	N. E.	..	Ditto.
26	29.635	58.8	60.5	50.0	N. E.	..	Ditto.
27	29.711	55.9	57.8	51.0	N. E.	..	Ditto.
28	29.545	60.2	61.7	56.6	N. E.	..	Ditto.
29	29.529	59.2	61.0	52.0	N. E.	..	Ditto.
30	29.527	62.0	64.6	53.9	N. E.	..	∼ scattered.
31	29.489	63.8	66.4	55.5	E.		
Mean.	29.625	61.2	62.2	53.3			

NOTE.—The dry bulb and maximum Register do not agree; the former always reads more than the latter. The average difference is 1.6.

Meteorological Register kept at the Office of the Secretary to Government, N. W. P., Agra, for the month of December, 1856.

Observations at apparent Noon.

Date.	Barometer.	Temperature.			Direction of Wind.	Quantity of Rain.	Aspect of the Sky.
		Of Mercury.	Of Air.	Wet Bulb.			
1	29.565	74.2	76.4	61.0	S. E.	...	Clear.
2	29.547	74.2	75.0	60.5	S. E.	...	Ditto.
3	29.529	72.1	73.4	62.5	S. E.	...	~ scattered towds. S. E.
4	29.597	69.5	71.5	61.0	N. E.	...	Clear.
5	29.423	69.3	70.2	57.8	N.	...	Ditto.
6	29.649	69.0	69.0	54.5	N. W.	...	Ditto.
7	29.641	69.0	70.0	52.0	N. W.	...	Ditto.
8	29.655	64.2	66.9	51.5	W.	...	Ditto.
9	29.665	65.2	67.9	52.5	W.	...	Ditto.
10	29.669	65.0	67.9	53.9	W.	...	Ditto.
11	29.631	64.9	67.5	54.0	N.	...	Ditto.
12	29.597	65.9	68.0	54.0	N.	...	Ditto.
13	29.629	67.1	69.0	55.0	N. E.	...	Ditto.
14	29.591	68.0	69.0	55.0	N. E.	...	⌣ all over.
15	29.571	65.0	66.5	55.0	N. E.	...	Clear.
16	29.547	64.0	65.9	54.0	N. E.	...	Ditto.
17	29.571	63.9	65.5	55.5	N.	...	Ditto.
18	29.533	65.0	66.9	54.9	N. W.	...	Ditto.
19	29.551	67.0	68.5	53.5	N. W.	...	Ditto.
20	29.627	67.5	68.9	53.5	W.	...	Ditto.
21	29.579	66.9	67.9	61.0	W.	...	Ditto.
22	29.661	63.2	65.5	51.5	N.	...	Ditto.
23	29.687	64.0	66.4	50.4	N. W.	...	Ditto.
24	29.611	63.0	65.1	50.4	W.	...	Ditto.
25	29.573	64.2	65.6	53.5	N. E.	...	Ditto.
26	29.621	61.0	63.0	51.0	N. E.	...	Ditto.
27	29.671	61.2	63.8	53.0	N. E.	...	Ditto.
28	29.509	65.0	66.4	58.5	N. E.	...	Ditto.
29	29.489	64.8	67.4	54.0	N. E.	...	Ditto.
30	29.489	68.5	71.5	56.5	E.	...	Ditto.
31	29.441	70.0	72.6	57.5	S. E.	...	Ditto.
Mean.	29.584	66.5	68.3	55.0			

Meteorological Register kept at the Office of the Secretary to Government, N. W. P., Agra, for the month of December, 1856.

Minimum pressure observed at 4 P. M.

Date.	Barometer.	Temperature.			Maximum and Minimum.			Aspect of the Sky.	Direction of Wind.	Quantity of Rain.
		Of Mercury.	Of Air.	Wet Bulb.	Maximum.	Minimum.	Mean.			
1	29.507	77.5	77.0	62.0	78.0	53.5	65.75	Clear.	S. E.	..
2	29.493	76.9	75.9	61.5	77.1	53.8	65.45	Ditto.	S. E.	..
3	29.481	71.2	69.5	59.5	75.5	54.8	65.15	~ scattered.	S. E.	..
4	29.567	74.5	73.5	62.5	74.5	54.0	64.25	Clear.	N. E.	..
5	29.591	73.2	72.2	58.8	73.5	50.0	61.75	Ditto.	N. W.	..
6	29.605	71.9	70.9	54.5	75.0	47.0	61.0	Ditto.	N. W.	..
7	29.621	73.0	73.2	54.0	74.5	45.5	60.0	Ditto.	N. W.	..
8	29.619	70.9	71.0	54.0	72.0	42.8	57.4	Ditto.	W.	..
9	29.623	70.5	70.5	55.0	72.0	44.9	58.45	Ditto.	W.	..
10	29.617	72.0	71.9	55.4	73.5	43.0	58.25	Ditto.	W.	..
11	29.571	72.5	72.0	56.2	73.5	44.9	59.2	Ditto.	N.	..
12	29.555	72.5	72.5	57.2	73.0	45.8	59.4	Ditto.	N. E.	..
13	29.591	71.0	70.5	58.5	72.0	49.9	60.95		N. E.	..
14	29.549	70.9	70.4	56.9	71.1	50.0	60.55			..
15	29.511	69.0	69.0	55.9	69.5	49.0	59.25			..
16	29.509	69.0	69.0	55.8	70.5	47.0	58.75			..
17	29.513	69.5	69.5	57.1	70.0	46.8	58.4	Clear. [over.	N. W.	..
18	29.501	72.5	72.0	55.1	73.8	44.5	59.15	⌣ scattered all	N. W.	..
19	29.511	73.5	73.0	55.5	75.0	44.8	59.9	Clear.	N. W.	..
20	29.589	73.0	72.1	55.0	76.0	45.8	60.9	Ditto.	W.	..
21	29.527	70.0	70.0	53.0	72.5	45.0	58.95	Ditto.	W.	..
22	29 633	70.0	69.4	52.5	71.0	44.0	57.5	Ditto.	N.	..
23	29.637	70.9	70.4	52.5	72.1	41.0	56.55	Ditto.	N. W.	..
24	29.579	69.0	69.0	53.0	70.4	41.8	56.1	Ditto.	W.	..
25	29.645	68.5	68.5	55.0	69.2	42.0	55.6	Ditto.	N. E.	..
26	29.591	67.0	67.0	53.8	67.5	42.0	54.75	Ditto.	N. E.	..
27	29.617	68.6	68.6	54.4	69.0	43.2	56.1	Ditto.	N. E.	..
28	29.469	69.0	69.0	60.0	70.5	43.0	56.75	Ditto.	N. E.	..
29	29.441	70.0	70.0	56.0	71.2	49.0	60.1	Ditto.	N. E.	..
30	29.449	74.0	74.0	58.4	74.1	50.5	62.3	Ditto.	E.	..
31	29.397	74.5	74.5	58.5	75.0	49.0	62.0	⌣ scattered.	E.	..
Mean.	29.552	71.4	71.1	56.3	72.6	46.7	59.69			

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of January, 1857.

Latitude 22° 33′ 1″ North. Longitude 88° 20′ 34″ East.

Height of the Cistern of the Standard Barometer above the Sea level, 18.11 Feet.

Daily Means, &c. of the Observations and of the Hygrometrical elements dependent thereon.

Date.	Mean Height of the Barometer at 32° Fahr.	Range of the Barometer during the day.			Mean Dry Bulb Thermometer.	Range of the Temperature during the day.		
		Max.	Min.	Diff.		Max.	Min.	Diff.
	Inches.	Inches.	Inches.	Inches.	o	o	o	o
1	30.031	30.118	29.970	0.148	66.8	76.6	60.0	16 6
2	.099	.169	30.042	.127	66.7	76.0	59.4	16.6
3	.106	.204	.050	.154	67.5	77.1	60.0	17.1
4	*Sunday.*							
5	.097	.150	.050	.100	70.8	80.0	63.5	16.5
6	.144	.214	.099	.115	71.1	80.2	63.5	16.7
7	.094	.171	.021	.150	71.9	81.0	63.8	17.2
8	.080	.156	.029	.127	72.1	80.3	66.0	14.3
9	.095	.191	.053	.138	69.1	77.4	62.8	14.6
10	.089	.160	.041	.119	67.9	76.5	60.7	15.8
11	*Sunday.*							
12	.099	.187	.040	.147	67.2	77.4	59.7	17.7
13	.113	.190	.055	.135	65.6	76.0	56.7	19.3
14	.092	.167	.045	.122	66.3	76.6	57.4	19.2
15	.055	.140	29.990	.150	66.7	74.9	60.6	14.3
16	.060	.130	30.018	.112	66.6	74.3	61.0	13.3
17	.037	.114	29.975	.139	64.6	73.9	57.6	16.3
18	*Sunday.*							
19	29.999	.089	.938	.151	65.1	75.3	58.0	17.3
20	30.004	.090	.944	.146	62.9	73.1	54.6	18.5
21	.009	.108	.954	.154	61.8	73.3	52.8	20.5
22	29.986	.076	.918	.158	62.1	72.2	53.6	18.6
23	.979	.067	.920	.147	62.8	75.0	53.9	21.1
24	.968	.059	.913	.146	63.9	76.3	54.4	21.9
25	*Sunday.*							
26	.938	.015	.887	.128	69.3	81.6	59.4	22.2
27	.902	29.979	.842	.137	71.4	82.2	63.6	18.6
28	.881	.956	.833	.123	73.7	84.1	65.4	18.7
29	.882	.955	.830	.125	73.3	84.5	64.4	20.1
30	.873	.951	.818	.133	73.7	84.9	63.8	21.1
31	.887	.965	.841	.124	74.4	84.3	66.4	17.9

The Mean height of the Barometer, as likewise the Mean Dry and Wet Bulb Thermometers are derived, from the twenty-four hourly observations made, during the day.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of January, 1857.

Daily Means, &c. of the Observations and of the Hygrometrical elements dependent thereon. *(Continued.)*

Date.	Mean Wet Bulb Thermometer.	Dry Bulb above Wet.	Computed Dew Point.	Dry Bulb above Dew Point.	Mean Elastic force of Vapour.	Mean Weight of Vapour in a cubic foot of air.	Additional weight of Vapour required for complete saturation.	Mean degree of Humidity, complete saturation being unity.
	o	o	o	o	Inches.	T. gr.	T. gr.	
1	61.6	5.2	58.5	8.3	0.498	5.51	1.75	0.76
2	62.0	4.7	59.2	7.5	.509	.64	.59	.78
3	63.3	4.2	60.8	6.7	.537	.94	.48	.80
4	*Sunday.*							
5	65.4	5.4	62.7	8.1	.572	6.29	.91	.77
6	66.2	4.9	63.7	7.4	.591	.50	.78	.79
7	66.9	5.0	64.4	7.5	.605	.63	.85	.78
8	67.7	4.4	65.5	6.6	.628	.88	.65	.81
9	62.9	6.2	59.8	9.3	.520	5.73	2.05	.74
10	60.9	7.0	56.7	11.2	.469	.17	.34	.69
11	*Sunday.*							
12	60.2	7.0	56.0	11.2	.458	.07	.28	.69
13	59.4	6.2	55.7	9.9	.453	.03	1.97	.72
14	61.3	5.0	58.3	8.0	.494	.47	.68	.77
15	62.3	4.4	59.7	7.0	.518	.74	.49	.79
16	61.3	5.3	58.1	8.5	.491	.43	.78	.75
17	58.9	5.7	55.5	9.1	.450	.01	.77	.74
18	*Sunday.*							
19	58.6	6.5	54.7	10.4	.438	4.87	2.02	.71
20	55.2	7.7	49.8	13.1	.371	.14	.29	.64
21	55.2	6.6	50.6	11.2	.381	.26	1.95	.69
22	54.6	7.5	49.3	12.8	.365	.07	2.20	.65
23	56.1	6.7	51.4	11.4	.392	.38	.03	.68
24	57.0	6.9	52.2	11.7	.402	.48	.15	.68
25	*Sunday.*							
26	62.6	6.7	59.2	10.1	.509	5.62	.21	.72
27	66.6	4.8	64.2	7.2	.601	6.60	1.75	.79
28	67.8	5.9	64.8	8.9	.613	.71	2.25	.75
29	65.9	7.4	62.2	11.1	.563	.15	.69	.70
30	65.9	7.8	62.0	11.7	.559	.10	.86	.68
31	67.2	7.2	63.6	10.8	.590	.43	.72	.70

All the Hygrometrical elements are computed by the Greenwich Constants.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of January, 1857.

Hourly Means, &c. of the Observations and of the Hygrometrical elements dependent thereon.

Hour.	Mean Height of the Barometer at 32° Fahr.	Range of the Barometer for each hour during the month.			Mean Dry Bulb Thermometer.	Range of the Temperature for each hour during the month.		
		Max.	Min.	Diff.		Max.	Min.	Diff.
	Inches.	Inches.	Inches.	Inches.	o	o	o	o
Mid-night.	30.022	30.148	29.874	0.274	64.2	70.5	56.7	13.8
1	.014	.140	.870	.270	63.4	69.8	56.0	13.8
2	.010	.118	.853	.265	62.5	69.0	55.0	14.0
3	29.998	.106	.841	.265	62.2	68.6	54.8	13.8
4	.995	.102	.841	.261	61.5	68.2	54.2	14.0
5	.998	.114	.847	.267	60.9	67.8	53.5	14.3
6	30.020	.133	.856	.277	60.5	67.1	53.0	14.1
7	.043	.155	.883	.272	60.2	66.4	52.8	13.6
8	.072	.191	.917	.274	62.0	68.6	54.6	14.0
9	.096	.207	.936	.271	65.9	72.3	59.0	13.3
10	.102	.214	.949	.265	69.1	75.4	62.0	13.4
11	.086	.201	.930	.271	71.9	79.2	65.3	13.9
Noon.	.055	.172	.909	.263	74.6	81.4	67.8	13.6
1	.018	.143	.876	.267	76.5	83.4	70.3	13.1
2	29.993	.123	.853	.270	77.5	84.4	71.8	12.6
3	.977	.104	.834	.270	77.9	84.9	72.2	12.7
4	.971	.108	.830	.278	76.1	83.4	70.9	12.5
5	.973	.113	.820	.293	74.7	81.6	69.0	12.6
6	.980	.121	.818	.303	72.0	78.8	66.2	12.6
7	.997	.126	.838	.288	70.0	76.0	64.3	11.7
8	30.017	.152	.856	.296	68.4	74.8	61.6	13.2
9	.030	.163	.873	.290	67.2	73.6	60.6	13.0
10	.035	.177	.879	.298	66.1	72.6	59.4	13.2
11	.032	.162	.875	.287	65.5	71.6	58.5	13.1

The Mean height of the Barometer, as likewise the Mean Dry and Wet Bulb Thermometers are derived from the Observations made at the several hours during the month.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of January, 1857.

Hourly Means, &c. of the Observations and of the Hygrometrical elements dependent thereon.—*(Continued.)*

Hour.	Mean Wet Bulb Thermometer.	Dry Bulb above Wet.	Computed Dew point.	Dry Bulb above Dew point.	Mean elastic force of Vapour.	Mean Weight of Vapour in a Cubic foot of Air.	Additional weight of vapour required for complete saturation.	Mean degree of humidity, complete saturation being unity.
	o	o	o	o	Inches.	Troy grs.	Troy grs.	
Mid-night.	60.8	3.4	58.4	5.8	0.496	5.51	1.18	0.82
1	60.3	3.1	58.1	5.3	.491	.47	.06	.84
2	59.5	3.0	57.4	5.1	.480	.36	0.99	.84
3	59.1	3.1	56.9	5.3	.472	.27	1.02	.84
4	58.7	2.8	56.7	4.8	.469	.24	0.92	.85
5	58.0	2.9	55.7	5.2	.453	.08	.96	.84
6	57.7	2.8	55.5	5.0	.450	.05	.92	.85
7	57.5	2.7	55.3	4.9	.447	.02	.89	.85
8	58.7	3.3	56.4	5.6	.464	.18	1.07	.83
9	60.8	5.1	57.7	8.2	.485	.37	.69	.76
10	62.3	6.8	58.9	10.2	.504	.56	2.22	.72
11	63.6	8.3	59.4	12.5	.513	.61	.87	.66
Noon.	64.7	9.9	59.7	14.9	.518	.65	3.55	.61
1	65.5	11.0	60.0	16.5	.523	.67	4.08	.58
2	65.5	12.0	59.5	18.0	.515	.57	.47	.56
3	65.7	12.2	59.6	18.3	.516	.59	.57	.55
4	64.6	11.5	58.8	17.3	.503	.46	.17	.57
5	64.8	9.9	59.8	14.9	.520	.66	3.57	.61
6	64.9	7.1	61.3	10.7	.546	.99	2.51	.71
7	64.2	5.8	61.3	8.7	.546	6.01	1.99	.75
8	63.3	5.1	60.2	8.2	.527	5.82	.80	.76
9	62.6	4.6	59.8	7.4	.520	.75	.60	.78
10	62.0	4.1	59.5	6.6	.515	.70	.40	.80
11	61.8	3.7	59.6	5.9	.516	.73	.25	.82

All the Hygrometrical elements are computed by the Greenwich constants.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of January, 1857.

Solar radiation, Weather, &c.

Date.	Max. Solar radiation.	Rain Gauge 5 feet above Ground.	Prevailing direction of the Wind.	General Aspect of the Sky.
	o	Inches.		
1	130.0	..	N. W.	Cloudless till 6 A. M. scattered _i till 8 P. M. cloudless afterwards.
2	126.0	..	N. W.	Cloudless.
3	130.9	..	N. W. & W.	Cloudless.
4	*Sunday.*			
5	135.5	..	N. W. & S. W.	Cloudless till 10 A. M. scatd. \i & _i till 5 P. M. cloudless & foggy afterwards.
6	136.0	..	Variable.	Cloudless till 4 P. M. scatd. _i afterwards, also foggy after sunset.
7	132.5	..	N. & N. W.	Cloudless till 1 P. M. scatd. _i till 6 P. M. cloudless afterwards. Also foggy in the morning and evening.
8	131.0	..	Variable.	Scatd. \i & _i till 9 A. M. cloudless till 11 A. M. scatd. ^i till 4 P. M. cloudless afterwards.
9	129.2	..	N. W.	Cloudless till 7 A. M. scatd. _i till Noon, cloudless afterwards.
10	127.0	..	N. & N. W.	Cloudless.
11	*Sunday.*			
12	133.5	..	N. & N. W.	Cloudless.
13	131.0	..	N.	Cloudless till 7 A. M. scatd. _i & \i till 6 P. M. cloudless afterwards.
14	129.0	..	W. & Calm.	Cloudless till 6 A. M. scatd. _i till 6 P. M. cloudless afterwards.
15	115.0	..	W.	Scatd. \i till Noon, scatd. _i till 6 P. M. cloudless afterwards.
16	111.5	..	N.	Cloudless till 2 A. M., cloudy till 6 P. M. cloudless afterwards.
17	131.0	..	N. W.	Cloudless till 6 A. M. scatd. \i & _i till 6 P. M. cloudless afterwards.
18	*Sunday.*			
19	133.0	..	N. W.	Cloudless.
20	129.0	..	N. W.	Cloudless.
21	133.0	..	N. W.	Cloudless.
22	132.0	..	N. W.	Cloudless.
23	130.4	..	N. & N. W.	Cloudless.
24	133.2	..	N. W. & N.	Cloudless.
25	*Sunday.*			
26	138.2	..	Calm & S.	Cloudless. [ing.
27	141.0	..	Variable.	Cloudless and heavy fogs in the morn-
28	141.0	..	S. & W.	Cloudless and foggy in the morning.
29	140.0	..	S. W.	Cloudless.
30	143.0	..	N. W. & S. W.	Cloudless.
31	134.0	..	S. & W.	Cloudless.

\i Cirri, _i cirro strati, ^i cumuli, ^_i cumulo strati, \^_i nimbi, —i strati, \^i cirro cumuli.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of January, 1857.

Monthly Results.

	Inches.
Mean height of the Barometer for the month, ...	30.022
Max. height of the Barometer, occurred at 10 A. M. on the 6th, ...	30.214
Min. height of the Barometer, occurred at 6 P. M. on the 30th, ...	29.818
Extreme Range of the Barometer during the month, ...	0.396

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	o
Mean Dry Bulb Thermometer for the month, ...	68.0
Max. Temperature, occurred at 3 P. M. on the 30th, ...	84.9
Min. Temperature, occurred at 7 A. M. on the 21st, ...	52.8
Extreme Range of the Temperature during the month, ...	32.1

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	o
Mean Wet Bulb Thermometer for the month, ...	61.9
Mean Dry Bulb Thermometer above Mean Wet Bulb Thermometer, ...	6.1
Computed Mean Dew Point for the month, ...	58.2
Mean Dry Bulb Thermometer above computed Mean Dew Point, ...	9.8
	Inches.
Mean Elastic force of vapour for the month, ...	0.493

	Troy grains.
Mean weight of vapour for the month, ...	5.44
Additional weight of vapour required for complete saturation, ...	2.09
Mean degree of Humidity for the month, complete saturation being unity,	0.72

	Inches.
Rained No. days. Max. fall of rain during 24 hours, ...	Nil.
Total amount of rain during the month, ...	Nil.
Prevailing direction of the Wind, ...	N. W. & N.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of January, 1857.

Monthly Results.

Table showing the number of days on which at a given hour any particular wind blew, together with the number of days on which at the same hour, when any particular wind was blowing it rained.

Hour.	N.	Rain on.	N. E.	Rain on.	E.	Rain on.	S. E.	Rain on.	S.	Rain on.	S. W.	Rain on.	W.	Rain on.	N. W.	Rain on.	Calm.	Rain on.
	No. of days.																	
Midnight.	4				1				5		1		2		9		5	
1	5				1				5		1		2		9		4	
2	4				1				4		1		1		10		5	
3	4								4		2		1		12		4	
4	4								3		3		1		13		3	
5	4								2		3		3		11		3	
6	6						1		2		2		3		11		2	
7	5		4				1		2		2		3		9		1	
8	7		5		1				2		1		3		7		1	
9	7		7				1		2		1		3		6			
10	10		5						2		2		3		5			
11	11		4		1				2		1		2		6			
Noon.	5		5				1		1		2		1		12			
1	5		1								4		4		13			
2	4										6		6		11			
3	2		1								2		11		11			
4	3										3		8		13			
5	2										2		8		15			
6	7								2		1		6		11			
7	6								2		2		5		11		1	
8	7								2		3		3		11		1	
9	9								3		2		3		8		2	
10	8								3		2		4		8		2	
11	7								3		3		3		8		2	

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of February, 1857.

Latitude 22° 33′ 1″ North. Longitude 88° 20′ 24″ East.

Height of the Cistern of the Standard Barometer above the Sea level, 18.11 feet.

Daily Means, &c. of the Observations and of the Hygrometrical elements dependent thereon.

Date.	Mean Height of the Barometer at 32° Fahr.	Range of the Barometer during the day.			Mean Dry Bulb Thermometer.	Range of the Temperature during the day.		
		Max.	Min.	Diff.		Max.	Min.	Diff.
	Inches.	Inches.	Inches.	Inches.	o	o	o	o
1	*Sunday.*							
2	29.903	29.987	29.850	0.137	74.5	83.6	67.2	16.4
3	.915	30.001	.845	.156	73.1	84.2	63.2	21.0
4	.914	29.989	.853	.136	75.4	86.0	68.0	18.0
5	.928	30.006	.858	.148	72.5	80.8	65.6	15.2
6	.985	.082	.926	.156	70.2	78.9	62.8	16.1
7	.977	.078	.912	.166	70.1	79.0	62.2	16.8
8	*Sunday.*							
9	.906	29.983	.856	.127	72.3	84.4	62.4	22 0
10	.956	30.043	.906	.137	73.1	82.6	65.0	17.6
11	.945	.038	.881	.157	71.6	81.1	64.4	16.7
12	.923	.021	.858	.163	69.9	79.8	62.0	17.8
13	.879	29.961	.798	.163	71.0	82.4	60.5	21.9
14	.869	.947	.807	.140	73.3	84.2	63.6	20.6
15	*Sunday.*							
16	.890	.968	.829	.139	77.9	86.0	72.0	14.0
17	.903	.985	.847	.138	77.7	87.2	71 6	15.6
18	.962	30.043	.909	.134	77.2	85.8	71.6	14.2
19	.951	.049	.862	.187	76.1	86.1	69.4	16.7
20	.902	29.995	.819	.176	75.6	86.0	66.0	20.0
21	.832	.908	.757	.151	77.2	86.0	70.8	15.2
22	*Sunday.*							
23	.774	.862	.711	.151	78.4	89.8	69.3	20.5
24	.817	.904	.760	.144	77.2	87.8	68.2	19.6
25	.805	.874	.735	.139	78.6	87.9	70.0	17.9
26	.794	.872	.727	.145	79.3	88.8	72.6	16.2
27	.775	.846	.697	.149	79.2	88.4	71.2	17.2
28	.779	.851	.711	.140	79.4	89.7	71.8	17.9

The Mean height of the Barometer, as likewise the Mean Dry and Wet Bulb Thermometers are derived from the twenty-four hourly observations made during the day.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, for the month of February, 1857.

Daily Means, &c. of the Observations and of the Hygrometrical elements dependent thereon.

Date.	Mean Wet Bulb Thermometer.	Dry Bulb above Wet.	Computed Dew Point.	Dry Bulb above Dew Point.	Mean Elastic force of Vapour.	Mean Weight of Vapour in a cubic foot of Air.	Additional Weight of Vapour required for complete saturation.	Mean degree of Humidity, complete saturation being unity.
	o	o	o	o	Inches.	T. gr.	T. gr.	
1	*Sunday.*							
2	66.4	8.1	62.3	12.2	0.565	6.16	3.02	0.67
3	65.2	7.9	61.2	11.9	.544	5.95	2.84	.68
4	69.3	6.1	66.2	9.2	.642	6.99	.44	.74
5	65.5	7.0	62.0	10.5	.559	.11	.52	.71
6	62.1	8.1	58.0	12.2	.489	5.38	.67	.67
7	61.4	8.7	57.0	13.1	.473	.20	.83	.65
8	*Sunday.*							
9	64.2	8.1	60.1	12.2	.525	.75	.83	.67
10	64.9	8.2	60.8	12.3	.537	.88	.91	.67
11	61.5	10.1	56.4	15.2	.464	.08	3.32	.61
12	60.7	9.2	56.1	13.8	.459	.05	2.93	.63
13	62.7	8.3	58.5	12.5	.498	.45	.80	.66
14	65.7	7.6	61.9	11.4	.557	6.09	.75	.69
15	*Sunday.*							
16	72.1	5.8	69.2	8.7	.708	7.67	.49	.76
17	71.9	5.8	69.0	8.7	.704	.62	.48	.75
18	70.5	6.7	67.1	10.1	.661	.17	.78	.72
19	67.9	8.2	63.8	12.3	.593	6.45	3.18	.67
20	66.9	8.7	62.5	13.1	.568	.18	.30	.65
21	69.0	8.2	64.9	12.3	.615	.69	.26	.67
22	*Sunday.*							
23	69.9	8.5	65.6	12.8	.630	.82	.49	.66
24	70.0	7.2	66.4	10.8	.646	7.01	2.94	.71
25	70.9	7.7	67.0	11.6	.659	.12	3.26	.69
26	71.9	7.4	68.2	11.1	.686	.41	.18	.70
27	72.6	6.6	69.3	9.9	.711	.67	2.89	.73
28	73.3	6.1	70.2	9.2	.732	.91	.71	.75

All the Hygrometrical elements are computed by the Greenwich constants.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of February, 1857.

Hourly Means, &c. of the Observations and of the Hygrometrical elements dependent thereon.

Hour.	Mean Height of the Barometer at 32° Fahr.	Range of the Barometer for each hour during the month.			Mean Dry Bulb Thermometer.	Range of the Temperature for each hour during the month.		
		Max.	Min.	Diff.		Max.	Min.	Diff.
	Inches.	Inches.	Inches.	Inches.	o	o	o	o
Midnight.	29.896	29.984	29.773	0.211	70.8	75.3	64.0	11.3
1	.889	.990	.759	.231	70.1	74.8	63.6	11.2
2	.874	.971	.745	.226	69.7	74.0	63.7	10.3
3	.863	.959	.734	.225	69.0	73.5	62.4	11.1
4	.861	.952	.728	.224	68.4	73.2	61.6	11.6
5	.869	.968	.742	.226	68.0	73.1	61.2	11.9
6	.886	.983	.763	.220	67.5	72.6	60.6	12.0
7	.912	30.010	.800	.210	67.4	72.8	60.5	12.3
8	.939	.048	.820	.228	70.0	75.8	64.0	11.8
9	.961	.074	.844	.230	73.5	79.2	68.2	11.0
10	.971	.082	.846	.236	76.4	82.3	71.4	10.9
11	.955	.066	.839	.227	79.1	84.6	73.2	11.4
Noon.	.929	.040	.809	.231	81.5	86.9	73.8	13.1
1	.892	.003	.777	.226	83.4	88.8	76.5	12.3
2	.860	29.966	.747	.219	84.4	89.4	77.8	11.6
3	.836	.946	.705	.241	84.7	89.8	78.9	10.9
4	.826	.932	.697	.235	84.2	89.6	78.0	11.6
5	.826	.926	.702	.224	82.6	88.6	76.6	12.0
6	.833	.939	.715	.224	79.5	84.0	73.6	10.4
7	.848	.946	.726	.220	76.9	82.0	71.5	10.5
8	.869	.979	.762	.217	75.2	79.5	69.8	9.7
9	.889	.988	.784	.204	73.9	79.4	67.8	11.6
10	.900	.991	.788	.203	72.6	77.6	67.3	10.3
11	.899	.989	.786	.203	71.6	76.4	65.0	11.4

The Mean height of the Barometer, as likewise the Mean Dry and Wet Bulb Thermometers are derived from the observations made at the several hours during the month.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of February, 1857.

Hourly Means, &c. of the Observations and of the Hygrometrical elements dependent thereon.

Hour.	Mean Wet Bulb Thermometer.	Dry Bulb above Wet.	Computed Dew Point.	Dry Bulb above Dew Point.	Mean Elastic Force of Vapour.	Mean Weight of Vapour in a cubic foot of Air.	Additional Weight of Vapour required for complete saturation.	Mean degree of Humidity, complete saturation being unity.
	o	o	o	o	Inches.	T. gr.	T. gr.	
Mid-night.	66.6	4.2	64.5	6.3	0.607	6.68	1.52	0.82
1	66.2	3.9	64.2	5.9	.601	.61	.42	.82
2	66.3	3.4	64.6	5.1	.609	.71	.22	.85
3	65.8	3.2	64.2	4.8	.601	.62	.14	.85
4	65.3	3.1	63.4	5.0	.586	.46	.16	.85
5	64.8	3.2	62.9	5.1	.576	.37	.16	.85
6	64.5	3.0	62.7	4.8	.572	.33	.09	.85
7	64.2	3.2	62.3	5.1	.565	.25	.14	.85
8	65.7	4.3	63.5	6.5	.588	.46	.54	.81
9	67.6	5.9	64.6	8.9	.609	.66	2.24	.75
10	68.3	8.1	64.2	12.2	.601	.53	3.19	.67
11	68.4	10.7	63.0	16.1	.578	.24	4.29	.59
Noon.	69.1	12.4	62.9	18.6	.576	.19	5.12	.55
1	69.4	14.0	62.4	21.0	.567	.06	.90	.51
2	69.4	15.0	61.9	22.5	.557	5.94	6.37	.48
3	69.4	15.3	61.7	23.0	.554	.91	.51	.48
4	69.2	15.0	61.7	22.5	.554	.91	.33	.48
5	68.7	13.9	61.7	20.9	.554	.93	5.75	.51
6	69.0	10.5	63.7	15.8	.591	6.38	4.28	.60
7	68.3	8.6	64.0	12.9	.597	.48	3.38	.66
8	68.1	7.1	64.5	10.7	.607	.61	2.76	.71
9	67.7	6.2	64.6	9.3	.609	.66	.35	.74
10	67.2	5.4	64.5	8.1	.607	.65	.01	.77
11	67.0	4.6	64.7	6.9	.611	.70	1.70	.80

All the Hygrometrical elements are computed by the Greenwich constants.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of February, 1857.

Solar Radiation, Weather, &c.

Date.	Max. Solar radiation.	Rain Gauge 5 feet above Ground.	Prevailing direction of the Wind.	General Aspect of the Sky.
	o	Inches.		
1	*Sunday.*			
2	140.0	..	W. & calm & N.	Cloudless.
3	141.0	..	W. & S.	Cloudless.
4	139.9	..	S.	Cloudless till 4 A. M. cloudy till 9 A. M. Cloudless till Noon, scattered ⌒i and ⌣i afterwards.
5	129.0	..	N. W. & N.	Cloudless till 5 A. M. scattered ⌣i till Noon, cloudless afterwards.
6	133.2	..	N. & S.	Cloudless.
7	135.0	..	N. W. & N.	Cloudless.
8	*Sunday.*			
9	136.0	..	N. W. & S. W.	Cloudless.
10	141.1	..	W. & S. W.	Cloudless.
11	134.0	..	N. W. & N. & W.	Cloudless.
12	137.0	..	N. W. & S. W.	Cloudless.
13	140.0	..	W. & S. E.	Cloudless.
14	140.0	..	W.	Cloudless till Noon, scatd. ⌒i and ⌣i till 5 P. M. cloudless afterwards.
15	*Sunday.*			
16	136.1	..	S. & W.	Scattered clouds till 6 P. M. cloudless afterwards.
17	142.3	..	S.	Cloudless till 7 A. M. scattered ⌒i till 6 P. M. cloudless afterwards.
18	140.6	..	S. W. & S. & S. E.	Cloudless till Noon, scattered ⌒i till 4 P. M. cloudless afterwards.
19	141.5	..	S. W. & W.	Cloudless.
20	142.0	..	S. W. & W.	Cloudless.
21	137.9	..	S. W.	Cloudless.
22	*Sunday.*			
23	148.0	..	S. W. & S.	Cloudless.
24	138.5	..	Variable.	Cloudless.
25	139.6	..	W. & N. W.	Cloudless till 11 A. M. scattered ⌒i till 8 P. M. cloudless afterwards.
26	143.9	..	S.	Cloudless till 5 A. M. scattered ⌒i & ⌣i till 7 P. M. cloudless afterwards.
27	144.0	..	S.	Cloudless till 10 A. M. scattered ⌒i till 6 P. M. cloudless afterwards.
28	138.0	..	S.	Cloudless till 5 A. M. cloudy till 3 P. M. cloudless afterwards.

⌃i Cirri, ⌣i Cirro strati, ⌒i Cumuli, ⌒i Cumulo strati, ⌄i Nimbi, —i Strati, ⌃ i Cirro cumuli.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of February, 1857.

Monthly Results.

	Inches.
Mean height of the Barometer for the month, ...	29.887
Max. height of the Barometer occurred at 10 A. M. on the 6th, ..	30.082
Min. height of the Barometer occurred at 4 P. M. on the 27th, ..	29.697
Extreme range of the Barometer during the month, ...	0.385

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	o
Mean Dry Bulb Thermometer for the month, ...	75.0
Max. Temperature occurred at 3 P. M. on the 23rd, ...	89.8
Min. Temperature occurred at 7 A. M. on the 13th, ...	60.5
Extreme range of the Temperature during the month, ...	29.3

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	o
Mean Wet Bulb Thermometer for the month, ...	67.3
Mean Dry Bulb Thermometer above mean Wet Bulb Thermometer, ..	7.7
Computed Mean Dew-point for the month, ...	63.4
Mean Dry Bulb Thermometer above computed mean Dew-point, ..	11.6
	Inches.
Mean Elastic force of Vapour for the month, ...	0.586

	Troy grains.
Mean Weight of Vapour for the month, ...	6.37
Additional Weight of Vapour required for complete saturation, ..	2.94
Mean degree of humidity for the month, complete saturation being unity,	0.68

	Inches.
Rained No. days, Max. fall of rain during 24 hours, ...	Nil.
Total amount of rain during the month, ...	Nil.
Prevailing direction of the Wind, ...	S. & W.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of February, 1857.

On the 7th and 23rd February, the Meteorological Observations after ten minutes intervals being taken at the Surveyor General's Office, they indicate the following circumstances.

7TH.

		h. m.	h. m.
Exact Time of Minimum Barometer, ...		4 0 A. M. &	4 10 P. M.
Ditto Maximum Barometer, ...		10 10 ditto &	9 50 ditto.
Ditto Minimum Temperature,	Between	7 20 &	7 30 A. M.
	or half an hour after sunrise.		
Ditto Maximum Temperature between, ..		2 50 &	3 0 P. M.

23RD.

		h. m.	h. m.
Exact Time of Minimum Barometer, ...		4 0 A. M. &	4 0 P. M.
Ditto Maximum Barometer, ...		10 0 ditto &	10 10 ditto.
Ditto Minimum Temperature, ..	7 0 ditto or half an hour after sunrise.		
Ditto Maximum Temperature,	Between 3 30 P. M. & 4 40 P. M. during which time the Thermometer was stationary.		

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of February, 1857.

Monthly Results.

Table showing the number of days on which at a given hour any particular wind blew, together with the number of days on which at the same hour when any particular wind was blowing it rained.

Hour.	N.	Rain on.	N. E.	Rain on.	E.	Rain on	S. E.	Rain on.	S.	Rain on.	S. W.	Rain on.	W.	Rain on.	N. W.	Rain on.	Calm.	Rain on.
					No. of days.													
Midnight.	2						1		7		6		4		2		2	
1	2						1		8		5		3		3		2	
2	1								8		6		3		3		2	
3	1								9		5		3		3		2	
4	2								7		5		5		2		3	
5	2								7		5		5		1		4	
6	2		1		1		2		6		3		4		2		3	
7	4		2		1		5		4				4		3		1	
8	4		2		1		2		7		1		3		4			
9	6		1		2		2		6		1		4		2			
10	4		3		2		2		4		4		2		3			
11	4		1		1				6		3		3		5			
Noon.	2		1						5		4		4		8			
1	1						1		3		5		7		7			
2	1				1				4		5		7		6			
3	1				1		1		4		4		7		6			
4									4		3		11		6			
5	1								5		6		9		3			
6	2				1				7		5		7		2			
7	1				1				8		5		5		3		1	
8	2								8		5		5		3		1	
9	2								9		4		5		3		1	
10	3								9		4		6		2			
11	2								9		4		6		3			

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of March, 1857.

Latitude 22° 33′ 1″ North. Longitude 88° 20′ 34″ East.

Height of the Cistern of the Standard Barometer above the Sea level, 18.11. Feet.

Daily Means, &c. of the Observations and of the Hygrometrical elements dependent thereon.

Date.	Mean Height of the Barometer at 32° Fahr.	Range of the Barometer during the day.			Mean Dry Bulb Thermometer.	Range of the Temperature during the day.		
		Max.	Min.	Diff.		Max.	Min.	Diff.
	Inches.	Inches.	Inches.	Inches.	o	o	o	o
1	*Sunday.*							
2	29.854	29.939	29.778	0.161	80.3	90.0	73.9	16.1
3	.808	.879	.734	.145	80.0	89.2	73.0	16.2
4	.844	.925	.780	.145	80.6	89.8	74.4	15.4
5	.863	.942	.817	.125	80.2	89.0	73.6	15.4
6	.858	.942	.803	.139	80.3	88.8	73.6	15.2
7	.868	.980	.752	.228	77.3	88.2	67.8	20.4
8	*Sunday.*							
9	.969	30.080	.916	.164	74.3	83.2	68.7	14.5
10	.937	.061	.881	.180	68.5	70.4	66.8	3.6
11	.914	29.972	.829	.143	71.6	80.4	64.8	15.6
12	.941	30.023	.889	.134	72.9	81.9	65.0	16.9
13	.980	.064	.935	.129	76.5	85.8	67.4	18.4
14	.950	.031	.888	.143	78.6	88.6	70.7	17.9
15	*Sunday.*							
16	.885	.973	.810	.163	80.6	90.6	72.3	18.3
17	.878	.957	.807	.150	81.2	92.4	71.8	20.6
18	.845	.928	.777	.151	80.8	90.8	72.4	18.4
19	.812	.882	.748	.134	80.8	92.6	69.8	22.8
20	.775	.859	.695	.164	82.1	93.2	74.1	19.1
21	.771	.836	.713	.123	83.0	94.2	74.7	19.5
22	*Sunday.*							
23	.733	.809	.646	.163	83.8	95.1	75.6	19.5
24	.719	.807	.659	.148	84.4	96.6	74.8	21.8
25	.741	.816	.676	.140	84.7	96.2	75.4	20.8
26	.786	.872	.731	.141	85.8	98.6	75.2	23.4
27	.784	.879	.689	.190	86.7	100.2	76.4	23.8
28	.675	.759	.583	.176	86.5	98.8	76.8	22.0
29	*Sunday.*							
30	.731	.815	.681	.134	85.7	95.4	78.8	16.6
31	.802	.881	.757	.124	84.9	94.8	78.2	16.6

The Mean height of the Barometer, as likewise the Mean Dry and Wet Bulb Thermometers are derived, from the twenty-four hourly observations made, during the day.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of March, 1857.

Daily Means, &c. of the Observations and of the Hygrometrical elements dependent thereon. *(Continued.)*

Date.	Mean Wet Bulb Thermometer.	Dry Bulb above Wet.	Computed Dew Point.	Dry Bulb above Dew Point.	Mean Elastic force of Vapour.	Mean Weight of Vapour in a cubic foot of air.	Additional Weight of Vapour required for complete saturation.	Mean degree of Humidity, complete saturation being unity.
	°	°	°	°	Inches.	T. gr.	T. gr.	
1	*Sunday.*							
2	73.0	7.3	69.3	11.0	0.711	7.66	3.25	0.70
3	72.8	7.2	69.2	10.8	.708	.64	.17	.71
4	74.3	6.3	71.1	9.5	.753	8.11	2.90	.74
5	74.6	5.6	71.8	8.4	.771	.31	.57	.76
6	74.9	5.4	72.2	8.1	.781	.41	.50	.77
7	72.3	5.0	69.8	7.5	.722	7.82	.16	.78
8	*Sunday.*							
9	67.8	6.5	64.5	9.8	.607	6.62	2 50	.73
10	65.1	3.4	63.4	5.1	.586	.64	1.19	.84
11	66.9	4.7	64.5	7.1	.607	.67	.73	.79
12	67.2	5.7	64.3	8.6	.603	.60	2.13	.76
13	69.5	7.0	66.0	10.5	.638	.92	.83	.71
14	71.0	7.6	67.2	11.4	.664	7.19	3.19	.69
15	*Sunday.*							
16	72.0	8.6	67.7	12.9	.674	.27	.74	.66
17	70.8	10.4	65.6	15.6	.630	6.78	4.43	.61
18	69.6	11.2	64.0	16.8	.597	.42	.65	.58
19	70.3	10.5	65.0	15.8	.617	.65	.42	.60
20	72.0	10.1	66.9	15.2	.657	7.06	.45	.61
21	75.1	7.9	71.1	11.9	.753	8.08	3.74	.68
22	*Sunday.*							
23	75.8	8.0	71.8	12.0	.771	.25	.85	.68
24	75.4	9.0	70.9	13.5	.748	.00	4.31	.65
25	77.3	7.4	73.6	11.1	.817	.73	3.69	.70
26	76.2	9.6	71.4	14.4	.761	.12	4.71	.63
27	76.5	10.2	71.4	15.3	.761	.10	5.08	.62
28	76.3	10.2	71.2	15.3	.756	.05	.05	.62
29	*Sunday.*							
30	77.0	8.7	72.6	13.1	.790	.43	4.37	.66
31	77.0	7.9	73.0	11.9	.801	.55	3 94	.69

All the Hygrometrical elements are computed by the Greenwich Constants.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of March, 1857.

Hourly Means, &c. of the Observations and of the Hygrometrical elements dependent thereon.

Hour.	Mean Height of the Barometer at 32° Fahr.	Range of the Barometer for each hour during the month.			Mean Dry Bulb Thermometer.	Range of the Temperature for each hour during the month.		
		Max.	Min.	Diff.		Max.	Min.	Diff.
	Inches.	Inches.	Inches.	Inches.	o	o	o	o
Mid-night.	29.836	29.977	29.690	0.287	76.1	80.8	67.0	13.8
1	.830	.966	.686	.280	75.3	80.8	66.7	14.1
2	.819	.950	.682	.268	74.8	80.2	66.1	14.1
3	.816	.938	.671	.267	74.2	80.2	65.5	14.7
4	.808	.935	.665	.270	73.7	80.2	65.3	14.9
5	.819	.940	.683	.257	73.3	79.6	65.0	14.6
6	.838	.963	.694	.269	72.9	78.8	64.8	14.0
7	.863	30.005	.714	.291	73.1	78.8	65.0	13.8
8	.895	.064	.750	.310	76.0	81.7	67.7	14.0
9	.913	.061	.758	.303	79.1	84.1	67.2	16.9
10	.917	.080	.759	.321	81.7	88.0	67.0	21.0
11	.903	.066	.738	.328	84.9	92.9	67.7	25.2
Noon.	.876	.035	.720	.315	87.2	96.3	67.8	28.5
1	.842	29.997	.675	.322	89.0	98.2	67.9	30.3
2	.812	.969	.652	.317	89.9	99.2	69.8	29.4
3	.788	.951	.617	.334	90.5	100.0	69.9	30.1
4	.774	.942	.598	.344	90.2	100.2	70.0	30.2
5	.772	.945	.584	.361	88.4	98.4	69.8	28.6
6	.781	.951	.583	.368	84.8	92.6	67.8	24.8
7	.797	.958	.601	.357	82.3	90.2	68.6	21.6
8	.821	.980	.632	.348	80.3	87.1	68.2	18.9
9	.836	.988	.652	.336	78.9	84.2	68.6	15.6
10	.849	.992	.659	.333	77.3	82.8	67.4	15.4
11	.844	.980	.666	.314	76.6	81.8	66.8	15.0

The Mean Height of the Barometer, as likewise the Mean Dry and Wet Bulb Thermometers are derived from the observations made at the several hours during the month.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of March, 1857.

Hourly Means, &c. of the Observations and of the Hygrometrical elements dependent thereon.—*(Continued.)*

Hour.	Mean Wet Bulb Thermometer.	Dry Bulb above Wet.	Computed Dew point.	Dry Bulb above Dew point.	Mean elastic force of Vapour.	Mean Weight of Vapour in a Cubic foot of Air.	Additional weight of vapour required for complete saturation.	Mean degree of humidity, complete saturation being unity.
	o	o	o	o	Inches.	Troy grs.	Troy grs.	
Mid-night.	72.7	3.4	71.0	5.1	0.751	8.17	1.46	0.85
1	72.2	2.1	70.6	4.7	.741	.07	.33	.86
2	71.9	2.9	70.4	4.4	.736	.04	.22	.87
3	71.4	2.8	70.0	4 2	.727	7.94	.15	.87
4	71.1	2.6	69.8	3.9	.722	.89	.07	.88
5	70.7	2.6	69.4	3.9	.713	.80	.04	.88
6	70.4	2.5	69.1	3.8	.706	.72	.04	.88
7	70.8	2.3	69.6	3 5	.717	.84	0.95	.89
8	72.3	3.7	70 4	5.6	.736	8.00	1.60	.83
9	73.3	5.8	70.4	8.7	.736	7.95	2.58	.76
10	73.7	8.0	69.7	12.0	.720	.74	3.63	.68
11	74.0	10.9	68.5	16.4	.692	.41	5.08	.59
Noon.	73.8	13.4	67.1	20.1	.661	.03	6.34	.53
1	73.7	15.3	66.0	23.0	.638	6.75	7.33	.48
2	73.5	16.4	65.3	24.6	.623	.59	.87	.46
3	73.4	17.1	64 8	25.7	.613	.48	8.24	.44
4	73.3	16.9	64 8	25.4	.613	.50	.09	.45
5	73.0	15.4	65.3	23.1	.623	.61	7.23	.48
6	73.7	11.1	68.1	16.7	.684	7.29	5.17	.59
7	74.1	8 2	70.0	12.3	.727	.81	3.77	.67
8	73.4	6.9	69 9	10.4	.725	.82	.09	.72
9	73.3	5.6	70.5	8.4	.739	8.00	2.47	.76
10	72.8	4.5	70.5	6.8	.739	.02	1.96	.80
11	72.7	3.9	70.7	5.9	.744	.08	.69	.83

All the Hygrometrical elements are computed by the Greenwich constants.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of March, 1857.

Solar radiation, Weather, &c.

Date.	Max. Solar radiation.	Rain Gauge 5 feet above Ground.	Prevailing direction of the Wind.	General Aspect of the Sky.
	o	Inches.		
1	*Sunday.*			
2	144.7	..	S.	Cloudless till 3 A. M. cloudy till 9 A. M. cloudless afterwards.
3	136.7	..	S.	Cloudless.
4	139.6	..	S.	Cloudless till 6 A. M. scattered ⌒i till 6 P. M. cloudless afterwards.
5	136.2	..	S. & S. E.	Variable aspect till 3 P. M. cloudless afterwards.
6	135.4	..	S.	Variable aspect till 2 P. M. cloudless afterwards.
7	138.0	0.30	S.	Cloudless till 7 A. M. scatd. ⌒i till 4 P. M. cloudy, with lightning & thunder & rain afterwards.
8	*Sunday.*			
9	129.2	..	N. W. & N. & W.	Cloudy till 10 A. M. scatd. \i & \—i afterwards.
10	..	0.14	N. & E.	Scatd. \i & \—i till 6 A. M. cloudy afterwards; also rain between 9 A. M. & 1 P. M.
11	131.0	0.52	N. & N. E.	Scatd. \i & \—i till 1 P. M. cloudy afterwards, also rain & thunder & lightning between 8 & 11 P. M.
12	134.0	..	W. & N. W.	Cloudless.
13	146.0	..	S. W.	Cloudless till 10 A. M. scatd. ⌒i till 5 P. M. cloudless afterwards.
14	140.0	..	S. & S. W.	Cloudless.
15	*Sunday.*			
16	141.5	..	S. W. & S.	Cloudless.
17	139.0	..	S. W. & S. & W.	Cloudless till 2 P. M. scatd. ⌒i till 6 P. M. cloudless afterwards.
18	135.0	..	S. W. & W.	Cloudless.
19	138.8	..	S. & W. & N. W.	Cloudless.
20	135.0	..	S.	Cloudless.
21	144.0	..	S.	Cloudless.
22	*Sunday.*			
23	138.8	..	S.	Cloudless.
24	145.0	..	S.	Cloudless.
25	136.5	..	S.	Cloudless.
26	154.8	..	S.	Cloudless.
27	143.0	..	S.	Cloudless.
28	139.6	..	S. & S. W.	Cloudless.
29	*Sunday.*			
30	138.0	..	S.	Cloudless.
31	134.0	..	S. & S. W.	Cloudless.

\i Cirri, \—i cirro strati, ⌒i cumuli, ⌒—i cumulo strati, \—i nimbi, —i strati \—i cirro cumuli.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of March, 1857.

Monthly Results.

			Inches.
Mean height of the Barometer for the month,	...	...	29.835
Max. height of the Barometer, occurred at 10 A. M. on the 9th,		...	30.080
Min. height of the Barometer, occurred at 6 P. M. on the 28th,		...	29.583
Extreme Range of the Barometer during the month,	...	...	0.497

			°
Mean Dry Bulb Thermometer for the month,	...	...	80.5
Max. Temperature, occurred at 4 P. M. on the 27th,	...	...	100.2
Min. Temperature, occurred at 6 A. M. on the 11th,	...	...	64.8
Extreme Range of the Temperature during the month,	...	...	35.4

			°
Mean Wet Bulb Thermometer for the month,	...	...	72.7
Mean Dry Bulb Thermometer above Mean Wet Bulb Thermometer,		...	7.8
Computed Mean Dew Point for the month,	...	...	68.8
Mean Dry Bulb Thermometer above computed Mean Dew Point,		...	11.7
			Inches.
Mean Elastic force of vapour for the month,	...	...	0.699

			Troy grains.
Mean weight of vapour for the month,	...	...	7.52
Additional weight of vapour required for complete saturation,		...	3.46
Mean degree of Humidity for the month, complete saturation being unity,			0.69

			Inches.
Rained 3 days. Max. fall of rain during 24 hours,	...	...	0.52
Total amount of rain during the month,	...	...	0.96
Prevailing direction of the Wind, ...	...	...	S. & S. W.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of March, 1857.

Monthly Results.

Table showing the number of days on which at a given hour any particular wind blew, together with the number of days on which at the same hour, when any particular wind was blowing it rained.

Date.	N.	Rain on.	N. E.	Rain on.	E.	Rain on.	S. E.	Rain on.	S.	Rain on.	S. W.	R in on.	W.	Rain on.	N. W.	Rain on.	Calm.	Rain on.
	No. of days.																	
Midnight.	3								18		2		2					
1	3								18		3		2					
2	2								19		3		2					
3	2						1		17		2		3					
4	1						1		17		4		2		1			
5	1						1		18		3		2		1			
6	3								17		4		1		1			
7	3						1		16		4		1		1			
8	3						1		13		6		1		1			
9	1						1		13		8	1	2		1			
10	1						1		10		11	1	2		1			
11	1		1						11		5		4	1	4			
Noon.			1		1	1			11		4		5		4			
1			2		1	1			6		7		6		4			
2	1		1		1				6		9		5		3			
3	1				1				9		6		6		3			
4	1		1		1		2		6		8		7					
5	1		2				2		8		6		7					
6			2				2		12		4		4	1	2			
7			2				2		13		2		4	1	3			
8	1		1	1			1		14		2		4	1	3			
9							3	1	14		2		3	1	3			
10	1						3		15		2		2	1	3			
11	2						4		14		2		2	1	2			

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of March, 1857.

On the 21st March, 1857, the Meteorological Observations after ten minutes intervals being taken at the Surveyor General's Office, they indicate the following circumstances :—

	h.	m.		h.	m.	
Exact Time of Minimum Barometer,.....	4	20	A. M. and	4	0	P. M.
Ditto Maximum Barometer, ...	9	30	do. and	11	0	do.
Ditto Minimum Temperature,.....	6	30	do.	or half an hour after sunrise.		
Ditto Maximum Temperature, ...	3	0	P. M.			

On Saturday, the 7th March, 1857. A Western gale sprung up at ½ past 5 P. M. and blew for three quarters of an hour. During the prevalence of the gale there was much thunder and lightning and also a little rain.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of April, 1857.

Latitude 22° 33′ 1″ North. Longitude 88° 20′ 34″ East.

Height of the Cistern of the Standard Barometer above the Sea level, 18.11 feet.

Daily Means, &c. of the Observations and of the Hygrometrical elements dependent thereon.

Date.	Mean Height of the Barometer at 32° Fahr.	Range of the Barometer during the day.			Mean Dry Bulb Thermometer.	Range of the Temperature during the day.		
		Max.	Min.	Diff.		Max.	Min.	Diff.
	Inches.	Inches.	Inches.	Inches.	o	o	o	o
1	29.794	29.868	29.733	0.135	84.1	93.6	76.8	16.8
2	.780	.860	.710	.150	84.4	94.0	78.2	15.8
3	.793	.857	.733	.124	84.2	93.6	78.4	15.2
4	.817	.914	.733	.181	84.3	92.6	77.6	15.0
5	*Sunday.*							
6	.854	.929	.773	.156	81.9	90.6	76.7	13.9
7	.854	.932	.730	.202	78.9	89.2	70.0	19.2
8	.858	.932	.778	.154	77.0	85.6	70.6	15.0
9	.835	.905	.737	.168	78.2	87.2	69.4	17.8
10	.794	.866	.696	.170	81.0	90.2	74.0	16.2
11	.778	.848	.669	.179	81.6	92.8	71.6	21.2
12	*Sunday.*							
13	.699	.771	.632	.139	84.1	93.8	77.0	16.8
14	.699	.772	.632	.140	84.4	94.6	76.6	18.0
15	.698	.775	.606	.169	86.6	96.2	79.8	16.4
16	.624	.720	.528	.192	87.7	98.4	80.2	18.2
17	.622	.687	.565	.122	88.5	98.1	81.2	16.9
18	.700	.769	.644	.125	86.7	94.8	81.0	13.8
19	*Sunday.*							
20	.727	.794	.663	.131	85.0	92.5	77.0	15.5
21	.748	.829	.671	.158	82.8	93.8	75.0	18.8
22	.780	.864	.698	.166	79.9	89.7	71.1	18.6
23	.824	.911	.693	.218	76.3	84.8	71.3	13.5
24	.802	.893	.728	.165	79.5	89.8	69.5	20.3
25	.786	.860	.698	.162	83.0	92.0	75.6	16.4
26	*Sunday.*							
27	.731	.792	.660	.132	85.7	94.8	78.5	16.3
28	.789	.872	.703	.169	83.9	94.3	74.6	19.7
29	.722	.806	.633	.173	85.4	96.0	77.0	19.0
30	.655	.732	.563	.169	87.3	98.8	79.8	19.0

The Mean height of the Barometer, as likewise the Mean Dry and Wet Bulb Thermometers are derived from the twenty-four hourly observations made during the day.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of April, 1857.

Daily Means, &c. of the Observations and of the Hygrometrical elements dependent thereon.

Date.	Mean Wet Bulb Thermometer.	Dry Bulb above Wet.	Computed Dew Point.	Dry Bulb above Dew Point.	Mean Elastic force of Vapour.	Mean Weight of Vapour in a cubic foot of Air.	Additional Weight of Vapour required for complete saturation.	Mean degree of Humidity, complete saturation being unity.
	o	o	o	o	Inches.	T. gr.	T. gr.	
1	77 2	6.9	73.7	10 4	0.819	8.78	3.43	0.72
2	77 5	6.9	74.0	10.4	.827	.86	.45	.72
3	77.9	6.3	74.7	9.5	.846	9.05	.19	.74
4	77.1	7.2	73.5	10.8	.814	8.70	.58	.71
5	*Sunday.*							
6	72.4	9 5	67.6	14.3	.672	7.23	4.21	.63
7	73.1	5.8	70.2	8.7	.732	.91	2.56	.76
8	71.5	5.5	68.7	8.3	.677	.57	.32	.77
9	71.9	6.3	68.7	9.5	.697	.54	.71	.74
10	75.8	5 2	73.2	7 8	.806	8.68	.46	.78
11	76.2	5.4	73 5	8.1	.814	.76	.58	.77
12	*Sunday.*							
13	78 2	5 9	75 2	8.9	.860	9.20	3.01	.75
14	78.4	6.0	75.4	9.0	.865	.26	.05	.75
15	80.1	6.5	76 8	9 8	.905	.63	.51	.73
16	79.7	8 0	75.7	12 0	.873	.28	4.28	.68
17	78.1	10 4	72.9	15.6	.797	8.45	5.43	.61
18	80.4	6.3	77 2	9.5	.916	9.75	3.43	.74
19	*Sunday.*							
20	78.7	6.3	75.5	9.5	.868	.27	.26	.74
21	74.8	8.0	70.8	12 0	.746	8.00	.75	.68
22	74.8	5.1	72 2	7.7	.781	.41	2.37	.78
23	70.1	6.2	67 0	9 3	.659	7.17	.52	.74
24	72.4	7.1	68.8	10.7	.699	.54	3.12	.71
25	76.4	6.6	73.1	9 9	.803	8.61	.21	.73
26	*Sunday*							
27	78.9	6 8	75.5	10.2	.868	9.27	.53	.72
28	76 0	7.9	72 0	11 9	.776	8.30	.83	.68
29	76.0	9.4	71.3	14.1	.758	.10	4.58	.64
30	78.9	8.4	74.7	12.6	.846	.99	.42	.67

All the Hygrometrical elements are computed by the Greenwich constants.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of April, 1857.

Hourly Means, &c. of the Observations and of the Hygrometrical elements dependent thereon.

Hour.	Mean Height of the Barometer at 32° Faht.	Range of the Barometer for each hour during the month.			Mean Dry Bulb Thermometer.	Range of the Temperature for each hour during the month.		
		Max.	Min.	Diff.		Max.	Min.	Diff.
	Inches.	Inches.	Inches.	Inches.	o	o	o	o
Midnight.	29.760	29.863	29.577	0.286	78.8	83.6	71.4	12.2
1	.751	.854	.574	.280	78.4	83.2	70.7	12.5
2	.738	.846	.566	.280	78.1	83.2	70.6	12.6
3	.739	.862	.571	.291	77.5	83.0	70.4	12.6
4	.749	.855	.621	.234	76.9	81.0	69.4	11.6
5	.753	.860	.608	.252	76.9	81.6	69.4	12.2
6	.776	.895	.617	.278	76.7	81.2	69.7	11.5
7	.798	.906	.648	.258	77.7	82.0	71.0	11.0
8	.822	.919	.667	.252	80.6	85.0	74.1	10.9
9	.832	.930	.680	.250	83.6	88.2	75.6	12.6
10	.830	.932	.687	.245	85.9	91.0	76.7	14.3
11	.818	.918	.681	.237	88.4	93.4	78.0	15.4
Noon.	.799	.905	.668	.237	89.9	95.2	79.6	15.6
1	.766	.885	.636	.249	91.4	96.6	81.6	15.0
2	.736	.846	.600	.246	92.3	97.8	84.3	13.5
3	.710	.838	.570	.268	92.3	98.8	83.2	15.6
4	.687	.814	.548	.266	91.4	98.4	80.4	18.0
5	.682	.802	.529	.273	89.3	96.8	80.0	16.8
6	.697	.814	.528	.286	85.9	92.0	75.4	16.6
7	.720	.834	.541	.293	83.4	89.3	71.8	17.5
8	.753	.864	.574	.290	81.7	86.4	70.6	15.8
9	.776	.898	.591	.307	80.1	85.0	70.0	15.0
10	.775	.922	.602	.320	79.1	84.2	70.0	14.2
11	.773	.932	.598	.334	78.5	84.1	70.4	13.7

The Mean height of the Barometer, as likewise the Mean Dry and Wet Bulb Thermometers are derived from the observations made at the several hours during the month.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of April, 1857.

Hourly Means, &c. of the Observations and of the Hygrometrical elements dependent thereon.

Hour.	Mean Wet Bulb Thermometer.	Dry Bulb above Wet.	Computed Dew Point.	Dry Bulb above Dew Point.	Mean Elastic Force of Vapour.	Mean Weight of Vapour in a cubic foot of Air.	Additional Weight of Vapour required for complete saturation.	Mean degree of Humidity, complete saturation being unity.
	o	o	o	o	Inches.	T. gr.	T. gr.	
Midnight.	75.2	3.6	73.4	5.4	0.811	8.78	1.66	0.84
1	74.9	3.5	73.1	5.3	.803	.70	.61	.84
2	74.7	3.4	73.0	5.1	.801	.67	.55	.85
3	74.2	3.3	72.5	5.0	.787	.54	.50	.85
4	73.9	3.0	72.4	4.5	.785	.51	.35	.86
5	74.1	2.8	72.7	4.2	.792	.61	.25	.87
6	73.9	2.8	72.5	4.2	.787	.56	.24	.87
7	74.6	3.1	73.0	4.7	.801	.67	.43	.86
8	75.9	4.7	73.5	7.1	.814	.78	2.23	.80
9	76.8	6.8	73.4	10.2	.811	.69	3.34	.72
10	77.6	8.3	73.4	12.5	.811	.64	4.23	.67
11	78.1	10.3	72.9	15.5	.797	.45	5.39	.61
Noon.	78.2	11.7	72.3	17.6	.783	.27	6.19	.57
1	79.0	12.4	72.8	18.6	.795	.38	.72	.56
2	79.1	13.2	72.5	19.8	.787	.28	7.22	.53
3	78.5	13.3	71.6	20.7	.766	.05	.45	.52
4	78.3	13.1	71.7	19.7	.768	.09	.01	.54
5	78.3	11.0	72.8	16.5	.795	.41	5.80	.59
6	77.9	8.0	73.9	12.0	.824	.79	4.08	.68
7	76.5	6.9	73.0	10.4	.801	.58	3.38	.72
8	75.9	5.8	73.0	8.7	.801	.60	2.77	.76
9	75.1	5.0	72.6	7.5	.790	.52	.32	.79
10	74.7	4.4	72.5	6.6	.787	.51	.02	.81
11	74.2	4.3	72.0	6.5	.776	.38	1.97	.81

All the Hygrometrical elements are computed by the Greenwich constants.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of April, 1857.

Solar Radiation, Weather, &c.

Date.	Max. Solar radiation.	Rain Gauge 5 feet above Ground.	Prevailing direction of the Wind.	General Aspect of the Sky.
	o	Inches.		
1	130.5	..	S.	Cloudless till Noon, scatd. _i till 9 P. M. cloudless afterwards.
2	132.0	..	S.	Cloudless till 1 P. M. scattered ⌒i or _i till 6 P. M. cloudless afterwards.
3	135.0	..	S.	Flying clouds the whole day.
4	128.0	..	S.	Cloudy.
5	*Sunday.*			
6	127.0	..	S. & S. W.	Cloudy.
7	109.2	1.13	S.	Cloudy, also raining & thundering & lightning between 7 P. M. & midnight.
8	124.0	..	Variable.	Cloudy till 7 P. M. cloudless afterwards.
9	135.4	..	S. & W. & S. W.	Cloudy the whole day; also drizzling between 3 & 6 A. M. & also at 8 P. M.
10	..	0.15	S.	Cloudy, also raining at 6 P. M.
11	138.5	..	S.	Cloudless at 8 A. M. scatd. ⌒i afterwards, also raining at 8 P. M. also thunders and lightning between 8 & 11 P. M.
12	*Sunday.*			
13	129.0	..	S.	Scatd. clouds nearly the whole day, also drizzling at 7 P. M.
14	133.0	..	S.	[wards. Cloudless till 4 A. M. scatd. _i after-
15	131.0	..	S.	Cloudless nearly the whole day.
16	136.0	..	S.	Cloudless.
17	147.0	..	S.	Cloudless.
18	131.7	..	S.	[wards. Cloudless till 3 A. M. scatd. clouds after-
19	*Sunday.*			
20	124.0	..	S. E.	Cloudy.
21	130.0	0.42	S.	Cloudy & drizzling between 2 & 4 A. M. and also between 8 & 9 P. M.
22	125.0	0.10	S.	Cloudy, also rain at 8 P. M. also thundering & lightning from 8 P. M. to midnight.
23	..	..	S. & N. W.	Cloudy, also drizzling at 9 P. M.
24	132.0	..	S. E. & S.	Cloudless till 4 A. M. scatd. clouds till 5 P. M. cloudless afterwards.
25	140.0	..	S.	Cloudy nearly the whole day.
26	*Sunday.*			
27	139.0	..	S. & S. E.	Cloudless till Noon, cloudy afterwards.
28	131.6	..	S. (S. E. gale between midnight & 1 A. M.)	Cloudy, also thundering and lightning and raining before sunrise and also after sunset.
29	139.0	..	S.	Cloudless.
30	141.0	..	S. & S. W.	Cloudless till 5 A. M. scatd. \i & _i till 5. P. M. cloudless afterwards.

\i Cirri, _i Cirro strati, ⌒i Cumuli, ⌒_i Cumulo strati, __i Nimbi, —i Strati, \\ i Cirro cumuli.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of April, 1857.

Monthly Results.

	Inches.
Mean height of the Barometer for the month, ...	29.760
Max. height of the Barometer occurred at 10 A. M. on the 7th and 11 P. M. on the 8th, ...	29.932
Min. height of the Barometer occurred at 6 P. M. on the 16th, ..	29.528
Extreme range of the Barometer during the month, ...	0.404

	°
Mean Dry Bulb Thermometer for the month, ...	83.2
Max. Temperature occurred at 3 P. M. on the 30th, ...	98.8
Min. Temperature occurred at 4 & 5 A. M. on the 9th, ...	69.4
Extreme range of the Temperature during the month, ...	29.4

	°
Mean Wet Bulb Thermometer for the month, ...	76.2
Mean Dry Bulb Thermometer above Mean Wet Bulb Thermometer, ..	7.0
Computed Mean Dew-point for the month, ...	72.7
Mean Dry Bulb Thermometer above computed mean Dew-point, ..	10.5
	Inches.
Mean Elastic force of Vapour for the month, ...	0.792

	Troy grains.
Mean Weight of Vapour for the month, ...	8.49
Additional Weight of Vapour required for complete saturation, ..	3.40
Mean degree of humidity for the month, complete saturation being unity,	0.71

	Inches.
Rained 10 days, Max. fall of rain during 24 hours, ...	1.13
Total amount of rain during the month, ...	1.80
Prevailing direction of the Wind, ...	S.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of April, 1857.

Monthly Results.

Table showing the number of days on which at a given hour any particular wind blew, together with the number of days on which at the same hour when any particular wind was blowing it rained.

Hour.	N.	Rain on.	N. E.	Rain on.	E.	Rain on.	S. E.	Rain on.	S.	Rain on.	S. W.	Rain on.	W.	Rain on.	N. W.	Rain on.	Calm.	Rain on.
						No. of days.												
Midnight.			1	1			4		21									
1							4		21	1							1	
2					1		3		20	1	1							
3							3		21	1	2	1						
4			2				2		19	1	2	2						
5			1		3		2		18		1	1						
6			1		4		3		13	1	1		4					
7			2		3		3		13		3		2					
8			1		5		3		13		3		1					
9	1				3		5		14		3							
10					1		3		14		7		1					
11							2		16		6		2					
Noon.							3	1	15		6		2					
1							2		15		7		2					
2							3		14		6		3					
3			1				2		14		6		3					
4							2		18	1	6							
5							6		19		1							
6	1						5		19	1	1							
7	1	1			2		3		19	1					1			
8	2	2	1	1	1		2		16				1	1	3	1		
9	1	1			2		3		17						3	3		
10			1	1	2		5		15						1		1	
11			1	1	2		4		16				1		1			

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of April, 1857.

On the 24th April, 1857, the Meteorological Observations after ten minutes intervals being taken at the Surveyor General's Office, they indicate the following circumstances.

		h. m.	h. m.
Exact Time of Minimum Barometer, ..	.. ..	2 30 A. M. &	4 35 P. M.
Ditto Maximum Barometer, ..	.. ..	9 50 ditto &	10 40 ditto.
Ditto Minimum Temperature,	Between 5 20 & 5 30 A. M. or qr. of an hour before sunrise.		
Ditto Maximum Temperature,	Between 3 20 & 4 0 P. M. during which time the Thermometer was stationary.		

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of May, 1857.

Latitude 22° 33′ 1″ North. Longitude 88° 20′ 34″ East.

Height of the Cistern of the Standard Barometer above the Sea level, 18.11. Feet.

Daily Means, &c. of the Observations and of the Hygrometrical elements dependent thereon.

Date.	Mean Height of the Barometer at 32° Fahr.	Range of the Barometer during the day.			Mean Dry Bulb Thermometer.	Range of the Temperature during the day.		
		Max.	Min.	Diff.		Max.	Min.	Diff.
	Inches.	Inches.	Inches.	Inches.	°	°	°	°
1	29.689	29.778	29.627	0.151	88.4	100.0	79.5	20.5
2	.641	.726	.546	.180	87.4	96.7	79.7	17.0
3	*Sunday.*							
4	.596	.656	.532	.124	88.3	99.6	82.0	17.6
5	.622	.707	.544	.163	87.4	96.6	80.6	16.0
6	.584	.646	.497	.149	87.0	93.2	81.7	11.5
7	.618	.680	.512	.168	86.5	93.6	69.0	24.6
8	.570	.627	.492	.135	83.0	93.6	73.0	20.6
9	.530	.593	.485	.108	80.7	91.6	73.6	18.0
10	*Sunday.*							
11	.667	.731	.597	.134	81.7	90.2	74.5	15.7
12	.650	.704	.547	.157	86.3	94.6	81.6	13.0
13	.694	.756	.611	.145	86.3	94.1	80.1	14.0
14	.722	.787	.658	.129	85.3	93.0	78.2	14.8
15	.694	.758	.603	.155	87.3	94.4	81.1	13.3
16	.668	.733	.582	.151	87.6	95.6	82.0	13.6
17	*Sunday.*							
18	.506	.568	.413	.155	86.8	96.4	78.8	17.6
19	.514	.581	.423	.158	88.5	97.0	81.6	15.4
20	.586	.734	.502	.232	84.9	92.0	76.6	15.4
21	.633	.736	.551	.185	84.4	94.0	75.5	18.5
22	.688	.755	.610	.145	82.1	90.0	75.4	14.6
23	.691	.758	.616	.142	85.7	93.8	80.4	13.4
24	*Sunday.*							
25	.628	.687	.548	.139	86.1	93.8	80.4	13.4
26	.540	.611	.432	.179	87.0	94.5	80.8	13.7
27	.437	.510	.345	.165	86.8	95.7	81.6	14.1
28	.410	.480	.337	.143	86.3	97.5	79.8	17.7
29	.489	.559	.432	.127	86.9	94.2	80.2	14.0
30	.519	.587	.450	.137	87.1	94.6	78.8	15.8
31	*Sunday.*							

The Mean height of the Barometer, as likewise the Mean Dry and Wet Bulb Thermometers are derived, from the twenty-four hourly observations made, during the day.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of May, 1857.

Daily Means, &c. of the Observations and of the Hygrometrical elements dependent thereon. *(Continued.)*

Date.	Mean Wet Bulb Thermometer.	Dry Bulb above Wet.	Computed Dew Point.	Dry Bulb above Dew Point.	Mean Elastic force of Vapour.	Mean Weight of Vapour in a cubic foot of air.	Additional Weight of Vapour required for complete saturation.	Mean degree of Humidity, complete saturation being unity.
	°	°	°	°	Inches.	T. gr.	T. gr.	
1	77.5	10.9	72.0	16.4	0.776	8.23	5.61	0.60
2	80.1	7.3	76.4	11.0	.893	9.51	3.94	.71
3	*Sunday.*							
4	80.8	7.5	77.0	11.3	.910	.67	4.13	.70
5	80.9	6.5	77.6	9.8	.928	.87	3.58	.73
6	80.8	6.2	77.7	9.3	.931	.92	.37	.75
7	80.1	6.4	76.9	9.6	.908	.66	.44	.74
8	78.7	4.3	76.5	6.5	.896	.61	2.21	.81
9	77.0	3.7	75.1	5.6	.857	.23	1.81	.84
10	*Sunday.*							
11	78.1	3.6	76.3	5.4	.890	.59	.78	.84
12	81.1	5.2	78.5	7.8	.955	10.18	2.84	.78
13	80.9	5.4	78.2	8.1	.946	.09	.93	.78
14	80.0	5.3	77.3	8.0	.919	9.82	.82	.78
15	81.4	5.9	78.4	8.9	.952	10.12	3.29	.76
16	81.7	5.9	78.7	8.9	.961	.22	.30	.76
17	*Sunday.*							
18	80.7	6.1	77.6	9.2	.928	9.89	.32	.75
19	83.1	5.4	80.4	8.1	1.014	10.76	.12	.78
20	77.9	7.0	74.4	10.5	0.838	8.95	.54	.72
21	77.0	7.4	73.3	11.1	.809	.65	.66	.70
22	77.1	5.0	74.6	7.5	.843	9.05	2.46	.79
23	79.9	5.8	77.0	8.7	.910	.71	3.09	.76
24	*Sunday.*							
25	80.3	5.8	77.4	8.7	.922	.83	.12	.76
26	80.4	6.6	77.1	9.9	.913	.72	.57	.73
27	79.8	7.0	76.3	10.5	.890	.48	.73	.72
28	79.7	6.6	76.4	9.9	.893	.53	.49	.73
29	81.6	5.3	78.9	8.0	.967	10.30	2.95	.78
30	81.6	5.5	78.8	8.3	.964	.27	3.06	.77
31	*Sunday.*							

All the Hygrometrical elements are computed by the Greenwich Constants.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of May, 1857.

Hourly Means, &c. of the Observations and of the Hygrometrical elements dependent thereon.

Hour.	Mean Height of the Barometer at 32° Fahr.	Range of the Barometer for each hour during the month.			Mean Dry Bulb Thermometer.	Range of the Temperature for each hour during the month.		
		Max.	Min.	Diff.		Max.	Min.	Diff.
	Inches.	Inches.	Inches.	Inches.	o	o	o	o
Mid-night.	29.618	29.726	29.412	0.314	81.2	85.4	73.0	12.4
1	.603	.719	.408	.311	81.1	84.8	74.8	10.0
2	.591	.705	.411	.294	80.9	84.2	74.7	9.5
3	.582	.696	.400	.296	80.9	84.0	74.6	9.4
4	.585	.707	.400	.307	80.7	83.8	74.5	9.3
5	.600	.719	.405	.314	80.5	83.3	74.8	8.5
6	.618	.746	.410	.336	80.8	83.8	75.0	8.8
7	.637	.765	.416	.349	82.0	85.4	75.3	10.1
8	.652	.774	.425	.349	84.4	87.2	77.0	10.2
9	.658	.787	.431	.356	86.7	90.8	78.0	12.8
10	.656	.777	.434	.343	89.2	92.6	80.0	12.6
11	.643	.776	.427	.349	91.0	95.2	82.8	12.4
Noon.	.627	.766	.415	.351	92.3	96.4	85.0	11.4
1	.598	.731	.386	.345	93.6	99.6	87.6	12.0
2	.570	.693	.364	.329	94.1	99.4	88.6	10.8
3	.550	.687	.344	.343	93.7	100.0	80.6	19.4
4	.530	.679	.337	.342	92.9	99.9	76.4	23.5
5	.527	.661	.346	.315	91.4	98.0	73.6	24.4
6	.543	.658	.367	.291	88.4	94.0	74.6	19.4
7	.563	.701	.381	.320	85.8	90.7	75.6	15.1
8	.589	.734	.402	.332	84.2	88.6	75.6	13.0
9	.612	.730	.406	.324	83.5	87.2	75.5	11.7
10	.620	.740	.398	.342	82.6	86.6	75.0	11.6
11	.617	.736	.399	.337	81.6	86.4	69.0	17.4

The Mean Height of the Barometer, as likewise the Mean Dry and Wet Bulb Thermometers are derived from the observations made at the several hours during the month.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of May, 1857.

Hourly Means, &c. of the Observations and of the Hygrometrical elements dependent thereon.—*(Continued.)*

Hour.	Mean Wet Bulb Thermometer.	Dry Bulb above Wet.	Computed Dew point.	Dry Bulb above Dew point.	Mean elastic force of Vapour.	Mean Weight of Vapour in a Cubic foot of Air.	Additional weight of vapour required for complete saturation.	Mean degree of humidity, complete saturation being unity.
	o	o	o	o	Inches.	Troy grs.	Troy grs.	
Mid-night.	77.7	3.5	75.9	5.3	0.879	9.47	1.74	0.85
1	77.8	3.3	76.1	5.0	.885	.53	.64	.85
2	77.9	3.0	76.4	4.5	.893	.62	.48	.87
3	78.0	2.9	76.5	4.4	.896	.67	.43	.87
4	78.0	2.7	76.6	4.1	.899	.69	.35	.88
5	78.0	2.5	76.7	3.8	.902	.72	.26	.89
6	78.3	2.5	77.0	3.8	.910	.81	.26	.89
7	79.0	3.0	77.5	4.5	.925	.94	.53	.87
8	80.1	4.3	77.9	6.5	.937	10.02	2.29	.81
9	81.0	5.7	78.1	8.6	.943	.04	3.14	.76
10	81.8	7.4	78.1	11.1	.943	.00	4.16	.71
11	82.1	8.9	77.6	13.4	.928	9.81	5.12	.66
Noon.	82.4	9.9	77.4	14.9	.922	.71	.79	.63
1	82.8	10.8	77.4	16.2	.922	.69	6.39	.60
2	83.1	11 0	77.6	16 5	.928	.73	.59	.60
3	82.5	11.2	76.9	16.8	.908	.52	.61	.59
4	81.8	11.1	76.2	16.7	.887	.33	.44	.59
5	82.0	9.4	77.3	14.1	.919	.70	5.40	.64
6	80.7	7.7	76.8	11.6	.905	.59	4.25	.69
7	79.6	6 2	76.5	9 3	.896	.57	3.26	.75
8	78.7	5.5	75.9	8.3	.879	.42	2.82	.77
9	78.5	5.0	76.0	7.5	.882	.45	.55	.79
10	78 3	4.3	76.1	6.5	.885	.50	.18	.81
11	77.8	3.8	75.9	5.7	.879	.46	1.88	.83

All the Hygrometrical elements are computed by the Greenwich constants.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of May, 1857.

Solar radiation, Weather, &c.

Date.	Max. Solar radiation.	Rain Gauge 5 feet above Ground.	Prevailing direction of the Wind.	General Aspect of the Sky.
	o	Inches.		
1	140.0	..	S.	Cloudless.
2	145.0	..	S.	Cloudless.
3	*Sunday.*			[afterwards.
4	138.0	..	S.	Cloudless till Noon, scattered clouds
5	142.0	..	S.	Cloudless. [wards.
6	124.5	..	S. (high.)	Cloudless till 5 A. M. scattered ⌣i after-
7	131.4	2.38	S. & S. E. (high.)	Cloudy, also a gale with much rain and hailstones and thunder and lightning between 10 and 11 P. M.
8	125.0	0.88	S. E. & S.	Cloudy, also raining at 3 P. M.; also raining and hailing with thunder and lightning at 6 P. M. [7 P. M.
9	116.0	1.42	S. E. & S.	Cloudy, also raining between 3 and
10	*Sunday.*	0.57		[7 A. M.
11	130.0	..	S. E.	Cloudy, also very slightly drizzling at
12	136.0	..	S.	Ditto ditto at 6 P. M.
13	129.0	0.36	S. E. & S.	Cloudy, also raining with thunder and
14	130.2	..	S. & N. E.	Cloudy. [lightning at 8 P. M.
15	148.0	..	Calm & S.	Cloudless till 5 A. M. scattered ⌢i till 8 P. M. cloudless afterwards.
16	144.0	0.08	S.	Cloudless till 6 A. M. scatd. ⌢i afterwards; also little rain between 6 and 7 P. M.
17	*Sunday.*	1.81		[also raining at 6 P. M.
18	131.8	..	S. & S. E.	Cloudless till 4 A. M. cloudy afterwards;
19	135.0	..	S.	Cloudless till 5 A. M. cloudy afterwards.
20	125.4	0.32	S. E. & E.	Cloudy till 10 A. M. cloudless till 4 P. M. cloudy afterwards, also a gale accompanied by rain and thunder and lightning between 7 and 9 P. M.
21	133.0	0.15	N. W. & S. E.	Cloudy, also raining at 10 and 11 P. M.
22	134.8	0.12	N. & S.	Cloudy, also raining between 8 & 9 P. M.
23	139.0	..	S. & S. E.	Cloudless till 10 A. M. scattered ⌢i till 3 P. M. scattered ⌣i afterwards.
24	*Sunday.*	0.80		[afterwards.
25	121.0	..	S. E. & S.	Cloudless till 5 A. M. scattered clouds
26	132.0	..	S.	Cloudless till 4 A. M. scattered clouds
27	142.0	..	S. W.	Cloudy. [afterwards.
28	133.0	..	S. & S. W.	Cloudless till 10 A. M. scatd. ⌣i and ⌢i till 4 P. M. cloudy afterwards. Also a N. W. gale and a little drizzling between ½ past 5 P. M. and 5′ to 6 P. M.
29	140.8	..	S.	Cloudy till 4 P. M. cloudless afterwards.
30	128.0	0.44	S. & N. E.	Cloudless till 1 P. M. scattered ⌒i & ⌣i till 5 P. M. cloudy afterwards. Also a west gale between 6-40 & 7 P. M. and likewise rain during the gale and for 2 hours afterwards.
31	*Sunday.*			

⌒i Cirri, ⌣i cirro-strati, ⌢i cumuli, ⌢i cumulo-strati,

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of May, 1857.

Monthly Results.

	Inches.
Mean height of the Barometer for the month, ...	29.600
Max. height of the Barometer, occurred at 9 A. M. on the 14th, ..	29.787
Min. height of the Barometer, occurred at 4 P. M. on the 28th, ..	29.337
Extreme Range of the Barometer during the month, ...	0.450

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	o
Mean Dry Bulb Thermometer for the month, ...	86.0
Max. Temperature, occurred at 3 P. M. on the 1st, ...	100.0
Min. Temperature, occurred at 11 P. M. on the 7th, ...	69.0
Extreme Range of the Temperature during the month, ...	31.0

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	o
Mean Wet Bulb Thermometer for the month, ...	79.9
Mean Dry Bulb Thermometer above Mean Wet Bulb Thermometer, ..	6.1
Computed Mean Dew Point for the month, ...	76.8
Mean Dry Bulb Thermometer above computed Mean Dew Point, ..	9.2
	Inches.
Mean Elastic force of vapour for the month, ...	0.905

	Troy grains.
Mean weight of vapour for the month, ...	9.65
Additional weight of vapour required for complete saturation, ..	3.26
Mean degree of Humidity for the month, complete saturation being unity,	0.75

	Inches.
Rained 16 days. Max. fall of rain during 24 hours, ...	2.38
Total amount of rain during the month, ...	9.33
Prevailing direction of the Wind, ...	S. & S. E.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of May, 1857.

Monthly Results.

Table showing the number of days on which at a given hour any particular wind blew, together with the number of days on which at the same hour, when any particular wind was blowing it rained.

Hour.	N.	Rain on.	N. E.	Rain on.	E.	Rain on.	S. E.	Rain on.	S.	Rain on.	S. W.	Rain on.	W.	Rain on.	N. W.	Rain on.	Calm.	Rain on.
							No. of days.											
Midnight.	2		1				5		16								1	
1	2		1				7		14								2	
2	2		1				6		14								3	
3	1		1				6		15						1		2	
4	2		1				6		13						1		3	
5	2		1				6		13		1				1		2	
6	2		1				6		12		2				1		2	
7	1		1		1		7	1	12		3				1			
8			2				7		13		2				1		1	
9			2				5		16		2				1			
10	1		1				6		17						1			
11	1		1				5		16		3							
Noon.	1		1				4		17		3							
1	1		1		2		3		16		3							
2			1		3		4		15		3							
3	1	1	1		3		4		13	1	2		1		1			
4	1	1	3		2		4		12		2		2					
5			2		2		5		11		3		2	1			1	
6			1		1		7	1	13	2	1		2	1	1	1		
7			2		2		6	1	13	1	1		1	1			1	
8			2		3		5	1	12		1		3	2				
9			2		3		7		11	1	2	1	1	1				
10			1		3		6	2	11		2		2				1	
11					4		5	2	12		1		2		1			

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of May, 1857.

On the 23rd May, 1857, the Meteorological Observations after ten minutes intervals being taken at the Surveyor General's Office, they indicate the following circumstances:—

		h.	m.		h.	m.	
Exact Time of	Minimum Barometer,.....	2	20	A. M. and	5	0	P. M.
Ditto	Maximum Barometer,.....	9	30	do. and	10	30	do.
Ditto	Minimum Temperature,.....	Between 5 0 and 6 0 A. M. during the whole of which interval the Thermometer stood at the same reading 80.4 which was the lowest temperature during the day.					
Ditto	Maximum Temperature,.....	2	20	P. M.			

On the 7th, a Southerly breeze blew from 10 A. M. till 4 P. M.; after which a South Easterly breeze springing up; the sky became overcast and distant flashes of sheet-lightning were constantly visible on the East side. Things continued in this state till 10 P. M. when it commenced raining heavily. At 20 minutes past 10 P. M. the South Easterly breeze which had been blowing since 4 P. M. became a gale. After the gale had set in, it continually veered its directions. At 11 P. M. all was quiet again. During the prevalance of the gale there was much rain, thunder, and lightning and an incessant fall of hailstones.

Also the undermentioned gales occurred during the month.

May 20th, between 6 and 7 A. M. a N. E. gale blew for about 10 minutes; only one side of the gale passing over Calcutta, the whole body of the gale going by the East thereof.

May 20th, between 7 and 8 P. M. a S. W. gale blew for about three quarters of an hour; during which and for upwards of an hour afterwards, there was much lightning and thundering, accompanied with little rain.

May 28th, between 5 and 6 P. M. a N. W. gale blew for about 20 minutes.

May 30th, between 6 and 7 P. M. a W. gale blew for about 20 minutes, during which there was little rain.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of June, 1857.

Latitude 22° 33′ 1″ North. Longitude 88° 20′ 34″ East.

Height of the Cistern of the Standard Barometer above the Sea level, 18.11 feet.

Daily Means, &c. of the Observations and of the Hygrometrical elements dependent thereon.

Date.	Mean Height of the Barometer at 32° Fahr.	Range of the Barometer during the day.			Mean Dry Bulb Thermometer.	Range of the Temperature during the day.		
		Max.	Min.	Diff.		Max.	Min.	Diff.
	Inches.	Inches.	Inches.	Inches.	o	o	o	o
1	29.569	29.648	29.490	0.158	86.7	92.8	81.4	11.4
2	.545	.612	.461	.151	86.9	92.4	83.6	8.8
3	.551	.616	.481	.135	86.9	92.2	81.6	10.6
4	.555	.599	.472	.127	87.0	92.9	80.3	12.6
5	.604	.655	.534	.121	84.9	93.8	80.6	13.2
6	.627	.663	.581	.082	85.8	93.2	81.3	11.9
7	*Sunday.*							
8	.567	.625	.485	.140	87.8	95.0	83.8	11.2
9	.534	.578	.475	.103	88.7	96.0	82.8	13.2
10	.565	.613	.494	.119	89.3	97.2	83.4	13.8
11	.620	.675	.572	.103	89.0	96.2	83.4	12.8
12	.610	.662	.525	.137	87.7	95.8	78.0	17.8
13	.584	.635	.509	.126	86.6	92.5	82.0	10.5
14	*Sunday.*							
15	.636	.707	.561	.146	87.0	94.6	82.0	12.6
16	.598	.675	.505	.170	86.7	94.0	81.4	12.6
17	.557	.607	.489	.118	86.1	94.6	81.7	12.9
18	.527	.588	.467	.121	85.6	93.6	82.0	11.6
19	.468	.512	.369	.143	84.2	90.0	82.0	8.0
20	.396	.448	.316	.132	85.5	90.6	80.8	9.8
21	*Sunday.*							
22	.302	.353	.249	.104	81.5	86.1	79.1	7.0
23	.392	.509	.316	.193	82.4	88.3	78.2	10.1
24	.549	.618	.493	.125	83.3	87.4	79.0	8.4
25	.573	.615	.502	.113	84.5	91.3	80.6	10.7
26	.533	.575	.477	.098	82.3	88.8	79.0	9.8
27	.488	.540	.442	.098	81.2	88.4	77.0	11.4
28	*Sunday.*							
29	.380	.413	.334	.079	80.2	82.5	78.8	3.7
30	.421	.459	.351	.108	79.5	84.5	77.4	7.1

The Mean height of the Barometer, as likewise the Mean Dry and Wet Bulb Thermometers are derived from the twenty-four hourly observations made during the day.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of June, 1857.

Daily Means, &c. of the Observations and of the Hygrometrical elements dependent thereon.

Date.	Mean Wet Bulb Thermometer.	Dry Bulb above Wet.	Computed Dew Point.	Dry Bulb above Dew Point.	Mean Elastic force of Vapour.	Mean Weight of Vapour in a cubic foot of Air.	Additional Weight of Vapour required for complete saturation.	Mean degree of Humidity, complete saturation being unity.
	o	o	o	o	Inches.	T. gr.	T. gr.	
1	80.9	5.8	78.0	8 7	0.910	10.01	3.17	0.76
2	81.3	5.6	78.5	8.4	.955	.18	.07	.77
3	81.4	5.5	78 6	8.3	.958	.21	.04	.77
4	82.1	4.9	79.6	7.4	.989	.54	2.75	.79
5	78.7	6.2	75.6	9.3	.871	9.31	3.18	.75
6	80.4	5.4	77.7	8.1	.931	.94	2.89	.78
7	*Sunday*							
8	82.1	5.7	79 2	8.6	.976	10.37	3 23	.76
9	82.2	6.5	78.9	9.8	.967	.26	.70	.74
10	82.6	6.7	79 2	10 1	.976	.35	.86	.73
11	82.0	7.0	78 5	10.5	.955	.12	.96	.72
12	81.0	6.7	77 6	10.1	.928	9.87	.69	.73
13	80.2	6.4	77.0	9.6	.910	.69	.45	.74
14	*Sunday.*							
15	80.8	6.2	77.7	9 3	.931	.92	.37	.75
16	80.5	6.2	77.4	9 3	.922	.83	.35	.75
17	80.5	5.6	77.7	8 4	.931	.94	.01	.77
18	80.5	5.1	77.9	7.7	.937	10.00	2.76	.78
19	80.5	3.7	78.6	5.6	.958	.26	1.98	.84
20	80.3	5.2	77.7	7.8	.931	9.94	2.78	.78
21	*Sunday*							
22	78.3	3.2	76.7	4 8	.902	.70	1 61	.86
23	78.5	3.9	76.5	5.9	.896	.63	.98	.83
24	79.5	3.8	77.6	5.7	.928	.95	.98	.83
25	80.1	4.4	77.9	6 6	.937	10.02	2.33	.81
26	79.4	2.9	77.9	4.4	.937	.08	1 50	.87
27	78.8	2.4	77.6	3.6	.928	9.99	.22	.89
28	*Sunday*							
29	78.2	2.0	77.2	3.0	.916	.89	0.99	.91
30	77.0	2.5	75.7	3.8	.873	.43	1.23	.89

All the Hygrometrical elements are computed by the Greenwich constants.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of June, 1857.

Hourly Means, &c. of the Observations and of the Hygrometrical elements dependent thereon.

Hour.	Mean Height of the Barometer at 32° Fahr.	Range of the Barometer for each hour during the month.			Mean Dry Bulb Thermometer.	Range of the Temperature for each hour during the month.		
		Max.	Min.	Diff.		Max.	Min.	Diff.
	Inches.	Inches.	Inches.	Inches.	o	o	o	o
Mid-night.	29.536	29.651	29.337	0.314	82.4	85.2	78.7	6.5
1	.524	.642	.301	.341	82.2	85.0	78.6	6.4
2	.514	.635	.304	.331	82.0	84.8	78.6	6.2
3	.509	.635	.297	.338	81.9	85.5	78.4	7.1
4	.510	.638	.274	.364	81.8	84.2	78.2	6.0
5	.523	.646	.278	.368	81.7	84.2	78.2	6.0
6	.543	.657	.289	.368	81.9	84.6	78.2	6.4
7	.558	.687	.305	.382	82.8	85.4	79.0	6.4
8	.567	.698	.320	.378	84.6	87.8	80.0	7.8
9	.573	.707	.324	.383	86.6	90.6	79.2	11.4
10	.573	.692	.315	.377	87.9	92.6	80.2	12.4
11	.565	.680	.312	.368	89.4	94.1	80.4	13.7
Noon.	.548	.662	.301	.361	90.5	95.0	80.2	14.8
1	.530	.637	.295	.342	90.7	96.4	81.3	15.1
2	.513	.615	.274	.341	90.0	97.2	78.0	19.2
3	.495	.598	.268	.330	89.6	97.2	78.3	18.9
4	.473	.584	.249	.335	88.5	96.4	78.0	18.4
5	.473	.620	.259	.361	87.7	94.8	77.8	17.0
6	.484	.611	.277	.334	86.2	92.0	77.0	15.0
7	.500	.608	.303	.305	85.0	89.6	77.4	12.2
8	.526	.635	.327	.308	83.9	88.0	78.0	10.0
9	.539	.663	.335	.328	83.3	86.7	78.8	7.9
10	.552	.663	.353	.310	83.0	86.8	79.0	7.8
11	.550	.649	.349	.300	82.7	85.6	79.0	6.6

The Mean height of the Barometer, as likewise the Mean Dry and Wet Bulb Thermometers are derived from the observations made at the several hours during the month.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of June, 1857.

Hourly Means, &c. of the Observations and of the Hygrometrical elements dependent thereon.

Hour.	Mean Wet Bulb Thermometer.	Dry Bulb above Wet.	Computed Dew Point.	Dry Bulb above Dew Point.	Mean Elastic Force of Vapour.	Mean Weight of Vapour in a cubic foot of Air.	Additional Weight of Vapour required for complete saturation.	Mean degree of Humidity, complete saturation being unity.
	o	o	o	o	Inches.	T. gr.	T. gr.	
Mid-night.	78.9	3.5	77.1	5.3	0.913	9.82	1.79	0.85
1	79.0	3.2	77.4	4.8	.922	.91	.63	.86
2	79.0	3.0	77.5	4.5	.925	.94	.53	.87
3	79.0	2.9	77.5	4.4	.925	.96	.48	.87
4	79.0	2.8	77.6	4.2	.928	.99	.41	.88
5	79.0	2.7	77.6	4.1	.928	.99	.38	.88
6	79.1	2.8	77.7	4.2	.931	10.02	.42	.88
7	79.7	3.1	78.1	4.7	.943	.12	.63	.86
8	80.4	4.2	78.3	6.3	.949	.16	2.23	.82
9	81.2	5.4	78.5	8.1	.955	.18	.96	.78
10	81.5	6.4	78.3	9.6	.949	.07	3.57	.74
11	82.1	7.3	78.4	11.0	.952	.08	4.17	.71
Noon.	82.5	8.0	78.5	12.0	.955	.10	.62	.69
1	82.4	8.3	78.2	12.5	.946	9.98	.82	.67
2	82.0	8.0	78.0	12.0	.940	.95	.55	.69
3	81.8	7.8	77.9	11.7	.937	.92	.41	.69
4	81.5	7.0	78.0	10.5	.940	.97	3.91	.72
5	80.9	6.8	77.5	10.2	.925	.84	.72	.73
6	80.3	5.9	77.3	8.9	.919	.80	.19	.75
7	80.0	5.0	77.5	7.5	.925	.88	2.65	.79
8	79.5	4.4	77.3	6.6	.919	.84	.29	.81
9	79.4	3.9	77.4	5.9	.922	.89	.04	.83
10	79.4	3.6	77.6	5.4	.928	.97	1.85	.84
11	79.3	3.4	77.6	5.1	.928	.97	.75	.85

All the Hygrometrical elements are computed by the Greenwich constants.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of June, 1857.

Solar Radiation, Weather, &c.

Date.	Max. Solar radiation.	Rain Gauge 5 feet above Ground.	Prevailing direction of the Wind.	General Aspect of the Sky.
	o	Inches.		
1	125.5	..	S. (high.)	Cloudy.
2	129.0	..	S. (high.)	Cloudy.
3	..	..	S. (high.)	Cloudy.
4	..	..	S. (high before sunrise.)	Cloudy.
5	119.0	..	S. (high 10 A. M. to 1 P. M.)	Cloudy.
6	127.0	..	S.	Cloudy, also slightly drizzling at 8 P. M.
7	*Sunday.*			
8	125.0	..	S. & S. W.	Scatd. clouds.
9	130.0	..	S.	Scatd. ⌣i till 3 P. M. cloudless afterwards.
10	134.0	..	S.	Cloudless till 6 A. M. scatd. ⌒i & ⌣i till 4. P. M. cloudless afterwards.
11	129.7	..	S.	Scatd. clouds.
12	134.0	1.50	S.	Scatd. clouds, also raining at 8 & 9 P. M.
13	124.0	..	S.	Cloudy.
14	*Sunday.*			
15	127.0	0.36	S.	Cloudless till 5 A. M. scatd. clouds till 7 P. M. cloudless afterwards, also raining at 3 P. M.
16	121.0	..	S.	Cloudless till 5 A. M. scatd. clouds afterwards.
17	127.8	..	S.	Cloudless till 6 A. M. cloudy afterwards, also a very loud clap of thunder followed by a little drizzling at 2 P. M.
18	124.0	..	E. & S. E.	Cloudy.
19	..	..	E. & N.	Cloudless till 4 A. M. cloudy till 8 P. M. cloudless afterwards.
20	..	..	N. E.	Cloudless till 5 A. M. cloudy afterwards.
21	*Sunday.*	0.75		
22	..	..	E.	Cloudy and occasionally raining.
23	..	0.61	E.	Cloudy and constantly raining.
24	..	0.50	S.	Cloudy and occasionally raining before noon.
25	118.0	..	S. & S. W.	Cloudy.
26	..	1.28	S. & S. E. & S. W.	Cloudy and also raining between 1 & 5 P. M.
27	..	1.69	S. W. & S. & W.	Cloudy and much rain between 1 & 10 P. M.
28	*Sunday.*	0.14		
29	..	0.96	S. W. & W.	Cloudy and constantly raining.
30	..	2.51	W. & S. W.	Cloudy & also raining between 1 & 4 P.M.

⌒i Cirri, ⌣i Cirro strati, ⌒i Cumuli, ⌒i Cumulo strati, ⌣i Nimbi, —i Strati ⌣i Cirro cumuli.

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of June, 1857.

Monthly Results.

	Inches.
Mean height of the Barometer for the month, ...	29.528
Max. height of the Barometer occurred at 9 A. M. on the 15th, ..	29.707
Min. height of the Barometer occurred at 4 P. M. on the 22nd, ..	29.249
Extreme range of the Barometer during the month, ...	0.458

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	o
Mean Dry Bulb Thermometer for the month, ...	85.3
Max. Temperature occurred at 2 & 3 P. M. on the 10th, ...	97.2
Min. Temperature occurred at 6 P. M. on the 27th, ...	77.0
Extreme range of the Temperature during the month, ...	20.2

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	o
Mean Wet Bulb Thermometer for the month, ...	80.3
Mean Dry Bulb Thermometer above Mean Wet Bulb Thermometer, ..	5.0
Computed Mean Dew-point for the month, ...	77.8
Mean Dry Bulb Thermometer above computed mean Dew-point, ..	7.5
	Inches.
Mean Elastic force of Vapour for the month, ...	0.934

	Troy grains.
Mean Weight of Vapour for the month, ...	9.97
Additional Weight of Vapour required for complete saturation, ..	2.67
Mean degree of humidity for the month, complete saturation being unity,	0.79

	Inches.
Rained 15 days, Max. fall of rain during 24 hours, ...	2.51
Total amount of rain during the month, ...	10.30
Prevailing direction of the Wind, ...	S,

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of June, 1857.

Monthly Results.

Table showing the number of days on which at a given hour any particular wind blew, together with the number of days on which at the same hour when any particular wind was blowing it rained.

Hour.	N.	Rain on.	N. E.	Rain on.	E.	Rain on.	S. E.	Rain on.	S.	Rain on.	S. W.	Rain on.	W.	Rain on.	N. W.	Rain on.	Calm.	Rain on.
					No. of days.													
Midnight.					3	1			18		1						3	
1					3		1		19		1						2	
2					3				19		2						1	
3					3		1		18		3							
4					2	1	1		20	1	3							
5	1				2	1	1		19	1	2				1			
6	2		2		1		1		18	1	2							
7	2		2		1		2		17	1	1		1	1				
8	1		3		2	1	1		13		5				1			
9	1		1		3				15		4	1	2					
10	2		1		2	1			15		5	1	1					
11			1		2	1			16	2	4		2		1			
Noon.			2		1				15		5		2		1			
1			2		2		1		15		4	1	2	2				
2					5	2			17	1	2	1	2	2				
3					4	1	1	1	15	1	3		3	1				
4			1		2		3	1	14		3	1	2	1				
5			1		2		3	2	16		3	1	1					
6			1		3		4	1	15		2	1	1					
7			1		5		2		14	1	3	2	1					
8	1	1	1		5	2	2		14		2		1			1		
9	1	1			6		1		15		1		2			3		
10	1				5		1		16		2	1	1					
11	1				5	1			18	1	1		1					

Abstract of the Results of the Hourly Meteorological Observations taken at the Surveyor General's Office, Calcutta, in the month of June, 1857.

On the 20th June, 1857, the Meteorological Observations after ten minutes intervals being taken at the Surveyor General's Office, they indicate the following circumstances.

		h.	m.
Exact Time of Minimum Barometer, ..	A. M.	4	30
	P. M.	4	50
Ditto Maximum Barometer, ..	A. M.	10	0
	P. M.	10	50

Ditto Minimum Temperature, A. M. Between h. m. 5 10 & h. m. 6 0 during the whole of which interval the thermometer stood at the same reading 80.8° which was the lowest temperature during the day.

Ditto Maximum Temperature, P. M. at m. 20 past noon and also at h. m. 4 10, the thermometer standing at 90.8°, at the former, and at 90.7° at the latter time.